UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

A CHRONOLOGICAL ACCOUNT OF MOUNTAIN PINE BEETDE SUPPRESSION ACTIVITIES ON THE TARGHEE NATIONAL FOREST 1959-1969

Compiled by John J. Kincheloe - November 1969

(6/65)

U S GOVERNMENT PRINTING OFFICE 1965 O—777-087

ROUGH DRAFT
JJKinchelce:ch
4/20/71

A Chronological Account of Mountain Pine Beetle Suppression Activities on the Targhee National Forest 1959-1969

Compiled by John J. Kinchelce - November 1969

Introduction

The eastern two-thirds of the Targhee National Forest is characterized by extensive stands of large mature and overmature lodgepole pine timber. This situation has existed for many years. It is not uncommon to find mountain pine beetle (Dendroctonus ponderosae Hopkins) in such timber stands and there have probably been outbreaks of epidemic proportions on the Forest for over 100 years.

Past records of insect activity on the Targhee are very sketchy and difficult to trace prior to 1964. However, the records do show that as early as 1927, a major flareup occurred which lasted through 1930. Approximately 100,000 infested trees were treated during that period. Another outbreak occurred which was considered a major epidemic in 1940 and suppression projects were carried out during that year. In 1950 approximately 40,000 infested trees were again treated by chemical means, burning, felling, etc.

What is considered the present epidemic was detected in the fall of 1958 by Sandin and Knopf in the Hawley Gulch-Canyon Creek area of the Rexburg District. Further investigation on the Forest showed that there were small localized epidemic outbreaks near the Kilgore area of the Spencer District. Control projects of one sort or another have been conducted on the Targhee National Forest from 1959 through the present.

Although there have been some significant accomplishments, a serious problem still exists. From the beginning of the current epidemic infestation, there have been major errors in the approach to solving the bark beetle problem on this Forest. The purpose of this chronology is to document in sequence all of the events that have led up to the present situation in the hopes that future attempts at suppressing this insect may be guided by the successes and mistakes made during the course of this endeavor. There is no intention to point the finger of blame for failures at any one level of management. The objective rather is to present the facts in a chronological order in the hopes that the system can be improved so that more effective results can be obtained for the money expended. As will be seen, there are certain weaknesses in the present system which have continually jeopardized successful results and at times resulted in unnecessary expenditure of insect control funds.

As has been stated, the present Targhee National Forest mountain pine beetle epidemic infestation was first detected and recognized as a serious threat to the lodgepole timber stands as early as 1958. It was found to be primarily on State and private lands along the western border of the Rexburg District and the Kilgore and Shotgun Valley areas adjacent to the Spencer District. The potential for serious loss from insect damage to these timber stands had been recognized for several years prior to this outbreak. Foresters had been concerned and had been attempting to harvest the large, mature, and overmature timber through pulp sales, tie sales, and small product sales.

The demand for lodgepole timber was not such that the desired results could be brought about silviculturally through harvest prior to 1958. It was obvious that additional marketing sources were necessary if these timber stands were

to be harvested and the stands converted to a younger age class. In an effort to induce industry to establish mills in the area, a large timber sale was laid out in the Moose Creek Plateau area in 1959. Prior to that timber sale, efforts had been made to interest the pulp industry to establish a pulp manufacturing plant in the Upper Valley area. These efforts were largely unsuccessful.

The Moose Creek sale was advertised in the amount of approximately 318,000,000 bd. ft. It was sold on October 27, 1960 to Idaho Stud Mill, Inc.

The original philosophy guiding suppression projects was primarily aimed at completely wiping out the epidemic bark beetle attack on the various areas to protect the timber stands from a multiple use standpoint. It was recognized that the most effective way to reduce the potential hazard to the timber stands was through silvicultural management of the Forest to reduce the age class. Also, great concern was felt about the damage to the esthetics involved. The Targhee National Forest, in certain areas, is heavily used for recreation such as camping, fishing, hunting, winter sports, etc. The first several years of suppression activities were aimed at completely reducing the epidemic to endemic proportions so that these esthetics would not be materially damaged. However, private landowners were not interested in treating insect-infested trees on their lands and would not enter into a cooperative suppression effort.

The epidemic eventually grew to such proportions that it was financially and logistically impossible to obtain the original objectives. In January of 1967, re-evaluation of objectives was necessary to determine the most practical course of action. All aspects of the problem were carefully examined by everyone in the Forest Service who was involved with the problem, and it was apparent that a new approach with new objectives was absolutely necessary. Finances, man-

manpower, equipment, etc., were not available to attempt complete control of the epidemic on the entire National Forest.

The largest block of merchantable timber remaining uninfested was located north of Warm River, including the Moose Creek Plateau area. This, of course, was where the large Moose Creek Plateau timber sale was located.

The intensity of infestation, through repeated chemical treating projects, had been kept at a low enough level north of the Cave Falls Highway so that a significant amount of timber was still available for harvest. Silvicultural control of the bark beetle epidemic through logging was and is still possible there. However, the timber could not be harvested and still cannot be harvested fast enough to accomplish these objectives without continued chemical control of the epidemic on those areas of the timber stand.

Experience has shown us that we can expect a reinfestation rate in one year, if chemical treating is not done, to as high as 5 to 1 rate of reinfestation and, in some cases, higher. It is obvious that if the chemical control had been dropped or is dropped in the future from the project areas north of the Cave Falls Highway a significant amount of the merchantable timber will be lost in from one to two years. The timber industry in this area would be seriously affected. For those reasons the objectives of chemical control and logging efforts were changed to allow chemical control to continue on that selected area in order to hold down the infestation to acceptable levels and reduce the spread to new areas until logging could be completed. That is the present objective and must be continued or the merchantable timber resource will be substantially lost.

It is an established fact with foresters that logging of timber stands such as occur on the Targhee is the first line of defense in eliminating the hazard of loss of a resource from insect attack. However, problems encountered in accomplishing this type of defense were considerable prior to the beginning of the present infestation. There was very little or no significant market. Access into the timber stands was practically nonexistent, and the cost of logging lodgepole did not make it an attractive product prior to the beginning of 2x4 stud production.

In an effort to make harvest possibilities more attractive to industry, roads were constructed into the Black Canyon area, Calamity and Canyon Creek, Fish Creek, North Hatchery Butte, Antelope Flat area, and one on Bishop Mountain. Later on, a road was constructed into the Jackpine area of the Teton Basin District. Actually an accelerated road program is only now being fully realized on the Targhee National Forest. The Fish Creek road is being reconstructed and intentions are to connect it from the Porcupine District to the Moose Creek Plateau sale area. Other roads are planned and some are in the initial stages of construction.

Considerable effort was made at the Forest level to stimulate timber harvest. However , the Idaho Stud Mill did not begin production until 1962. Original intentions were to conduct a double-shift operation but that did not start until as late as 1969.

In 1965 several sales were advertised as administrative use sales at $.50 stumpage with the stumpage being increased to either $1.50 or $2.00, which was the minimum commercial rate, if the logging outfits could not or would

not remove the infested timber prior to insect maturity. One sale was sold at the $.50 rate with no escalation in price. Other sales were offered under these conditions but no one bought them. That practice was discontinued after 1966 because the $.50 stumpage did not stimulate enough interest to justify continuation. The reduction in stumpage prices did not significantly contribute to any acceleration in timber cutting. However, timber sales were offered in increasing abundance and since 1963, the annual cut has increased from 12,500,000 bd. ft. per year to 54,400,000 bd. ft. in 1969.

Logging efforts have been concentrated in the infested areas until the present. Actual harvest on the Moose Creek Plateau sale, which is a relatively uninfested area, has not been heavy. Since 1948, 240,200,000 bd. ft. of lodgepole timber have been harvested on infested or threatened areas and actually 609,100,000 bd. ft. have been sold. From 1963 to the present, 194,100,000 bd. ft. of lodgepole timber within the epidemic areas have been offered but not sold because no one bid on them.

It is obvious from these facts that conscientious efforts by personnel of the Targhee National Forest to comply with the Chief's directives of using logging as a first line of defense against beetle attack have been made.

Existing minimum stumpage rates, appraisal methods, etc., have resulted in appraised stumpage prices that have not been greatly attractive to the timber industry. Although significant progress has been made through timber harvest, it has not been as effective as it could have been if sale packages could have been more attractive to the industry. An illustration is the large Warm River timber sale which was offered in the spring of 1969 for approximately 150,000,000 bd. ft. There were no bidders because the stumpage price was

considered too high to make it profitable to log. That sale is in the process of being reappraised and will be reoffered in the near future. It is hoped that future appraisal methods will be such that timber sales on the Targhee can be made at prices which industry considers economical and that harvest can continue to be accelerated so that it can contribute more effectively to the eventual suppression of the mountain pine beetle epidemic situation that now exists.

The first significant efforts at chemical control on the present epidemic insect infestation of the mountain pine beetle on the Targhee National Forest were made during the spring of 1959. From the beginning, however, serious problems affected the success of those efforts. The infestation extended onto private and State lands adjacent to the National Forest boundary. Attempts at cooperative treating with private landowners were largely unsuccessful. Directions to the Forest were that we could only contribute 25 percent of the cost of treating on private land and the landowner had to pay the other 75 percent and in no event could 10 percent of the total suppression project cost be exceeded on alienated lands.

Most of the landowners in this area are engaged in agricultural activities and were not overly concerned with the loss of lodgepole pine. In fact, a large percent of them considered the timber a nuisance and would be rather be rid of it on their lands. These infested trees created a source for reinfestation of treated areas on National Forest land.

Survey funds were largely inadequate for the first several years of the suppression effort. It was not until the fall of 1964 that funds were available for an extensive survey of all infested areas both inside and

outside the National Forest. However, funds were inadequate to do this work job; in fact, even after the entire infestation was surveyed and the seriousness of the attack truly determined in the fall of 1964, funds that were made available were so inadequate that only a hot spotting operation was possible during the spring of 1965. That year all chance of completely suppressing the epidemic by chemical means was lost. The insect flight that occurred during the summer of 1965 resulted in widespread insect attack over a major portion of the Targhee National Forest and adjacent private and State lands. In some areas it built up as much as five to one.

Finances were provided during the fall of 1965 to treat the entire infestation on National Forest lands. Permission to treat on adjacent lands, regardless of cooperation or contributions, was denied. Attempts were made to induce the private landowners to cut and burn or log the infested trees on their land by offering them $1.00 per tree for each tree adequately removed or destroyed, which was the share that was authorized for Forest Service contribution. This cooperative effort was largely unsuccessful. Many private landowners, on whose land intense infestations existed, could not or would not make any effort to participate. A control project was carried out on National Forest lands which was highly effective. However, the results of not treating on adjacent private lands was that a serious reinfestation of National Forest lands occurred.

Due to lack of adequate financing to carry out control efforts on the entire Forest in 1966, the infested area on the Rexburg District was eliminated from the control project area. It was impossible to continue treatment there and also treat the other areas of infestation which extended over a much larger area on the rest of the National Forest. By 1966, the Rexburg infestation

had grown to such proportions that it was impractical to attempt control. Costs would have been prohibitive. Even had they been available, it would have taken all available finances to treat that area and the rest of the infestation on the Forest would have had to be allowed to go unchecked.

Another philosophy that existed which resulted in some of the control dollars being taken from the major suppression effort was that we should treat in areas of high value such as roadside zones, Boy Scout camps, summer home areas, etc., even though no control efforts were being made in intensely infested areas adjacent to them. This, of course, was a fallacy. It accomplished nothing from a suppression standpoint to treat isolated areas of infestations which were, in fact, a part of large infested areas. The untreated trees adjacent to the high value areas merely produced multitudes of insects which readily reinfested the high value areas after treatment. Although this was not done extensively, it was an expensive effort and did take money from the main control area.

The system of allocating funds on a fiscal year basis has caused many problems. In only one fiscal year during the course of this project, have funds been provided that carried over past the end of the fiscal year. Funds allocated in 1963 were such that any remaining funds at the end of the fiscal year could be spent during the next fiscal year. We have repeatedly recommended that suppression funds be allocated in this manner. For some reason that is unknown to us, we have been unable to have this recommendation accepted.

Because of weather, access, etc., it is impossible to complete large control projects by July 1 or the end of the fiscal year. If weather slows down suppression activities to a large extent during the spring, actually a major

portion of the chemical treating effort is carried out during July. This has often resulted in a large surplus of funds at the end of the fiscal year which cannot be used. Additional funds had to be provided to cover the cost of completing the project during July of the following fiscal year. The result has been the expenditure of more funds during July of new fiscal year money than had been originally planned. Funds for contracts such as chemical and other supply contracts cannot be obligated from preceding fiscal year finances. Attempts were then made to utilize the surplus of funds at the end of the fiscal year primarily in road construction.

Access has always been a major problem in carrying out suppression projects. A strong effort was made to obligate funds on road contracts prior to the end of the fiscal year with surplus funds. The result was that the main access roads were sometimes torn up by construction which seriously hindered contractors that were engaged in insect control treating contracts. On several occasions we have narrowly averted appeals because of the interference of access by Forest Service road crews and contractors. Had insect control funds been allowed to carry over into the next fiscal year, road construction or reconstruction for insect control purposes could have been scheduled after the suppression projects were completed and prior to beginning of the next project.

One of the major hindrances to continued chemical control efforts, which must be followed up for a period of several years on an infestation of this size if control is going to be completely effective, was and is the method of providing funds for the suppression projects. At no time during the course of this infestation and the resulting suppression efforts has it been known what support, financially and otherwise, was going to be provided for the followup project.

Often, in fact every year except one, sufficient funds for the planned project were not made available until late in the winter and sometimes as late as early spring. It has been impossible to effectively plan ahead for control activities. By virtue of the insect's life history, the period from the middle of September until the first part of November is actually the most effective period for conducting control activities. Weather is good, access is at its best even on primitive roads, treating conditions are good with very little interference by weather, and working conditions in the woods are at their best.

Only during the fall of 1965 were funds made available early enough in the year so that effective control efforts could be carried out during the fall. Even during that year the Forest received funds late enough so that the major portion of the chemical spraying had to be done in the spring of the following year. Most of the spotting and unit preparation in the field was possible during the fall; however, which gave us a distinct time advantage in the spring.

The lack of continued financial support for the suppression efforts made it impossible to maintain a trained force of project overhead from year to year. Even though a Forest Service project supervisor was assigned permanently in 1964 to organize, train, and supervise the entire project from the Forest Supervisor's headquarters, it was still impossible to assign field supervisors and assistants permanently on a continuing basis. The bulk of the project overhead was assigned on a detail basis. It was not until 1967 that a permanent zone supervisor was assigned to the project to assist the project supervisor. In fact, that is the situation as it now stands.

Presently it is not known what the future holds as far as the continuation of chemical control efforts are concerned.

There have also been many problems in contracting, with most of the treating work being done by individual contractors. Contract administration has been carried out by personnel who actually have had very little training, both legal or otherwise, in contracting. It has been repeatedly recommended that high level contract administrative and legal training be provided to project supervisory personnel from the highest level. To date, after a course of 10 years, this training has largely yet to be provided. Much of our experience has been gained the hard way. Controversies have often occurred, not because of poor contract administration necessarily or because we wrongfully dealt with a contractor, but primarily because of legal technicalities and because we were unaware of the documentation necessary to provide a strong legal background. For several years the contracting officer was located in Ogden, Utah, far removed from the actual on-the-ground endeavors. It has only been the last few years that the Forest was provided with a contracting officer. However, his authority was limited to the point where some of our contracts still had to be under the contracting officer in Ogden. Contract administration by remote control has often resulted in misunderstanding, failure to act promptly in cases of default or potential default, lack of understanding of on-the-ground conditions, etc. It is essential to the effective administration of treating contracts that trained contracting personnel be as close to the job as possible.

On several occasions there has been a lack of coordination between other activities on the Forest, such as road construction and timber sales, and the control project which has resulted in inconveniences, disputes with contractors and serious legal problems have been narrowly averted on several occasions. Timber sales have been

made on existing contract treating units on which a contractor had contracted to treat a specified number of trees and on which logging was carried out with the project supervisor being unaware that a timber sale existed in the area. Contractors are paid on a per tree basis. They are naturally somewhat irate if a logger goes in and cuts the trees before he has a chance to treat them. It has created serious safety problems when a treating contractor is in an area and all of a sudden, unknown to anyone, loggers start falling trees.

The difficulties have already been pointed out resulting from road crews moving in and tearing up the main access roads for reconstruction purposes when a treating contractor, or several of them, need to use that road as their only route of access into an area. Sometimes existing roads have been made impassable by these reconstruction efforts.

There has sometimes been a failure to include the project supervisor in meetings where policies and plans were formulated. This has sometimes resulted in a lack of coordination merely because he was not kept informed of objectives and other activities that would affect the suppression efforts.

It is absolutely necessary that all contract work be thoroughly checked to insure quality treating. The majority of the project field supervisory personnel are recruited as detailers from other National Forests. This, of course, is necessary and it would be impossible to maintain a permanent force of checker foremen and other project overhead on the Forest from year to year. Obviously other Forest Supervisors have their own work to accomplish. Because of the fact that we request experienced people of a high caliber, the impact on other National Forests is severe. Consequently it is difficult to maintain on a continuing basis an experienced organization. Therefore, when each project is organized intensive training must be given to the new project overhead at the beginning

of each project. Here again, the delay in receiving funds has made it often impossible to give adequate training to the new project organization, because of the press of time involved in getting the treating done before the insects fly. In fact we have received finances at such a late date that we have advertised contracts, tentatively arranged for detailers and had to hold off any action until practically the day treating began because we did not know if we were going to receive finances to carry out the project.

In spite of the many problems involved, the control effort on the Targhee National Forest, both logging and chemical, has been surprisingly effective. Over the past ten years the infestation has spread from the relatively isolated attacks adjacent to the Rexburg District and the Spencer District throughout most of the lodgepole timber stands on the Forest with the exception of the Moose Creek Plateau area on the Island Park District. A major part of the logging and continued chemical control effort has been possible on that portion of the Porcupine District north of the Cave Falls road, on the infested area of the Ashton District, Island Park District, and the Spencer District. The infested areas of the Spencer and Island Park Districts have been brought to an endemic level. A major portion of the Ashton District has also been brought to an endemic level.

An excellent example of the effectiveness of chemical treatment is the Calf Creek unit on the Porcupine District. With three years of continuous suppression work, that one thousand acre unit was reduced from seven infested trees per acre to less than one-tenth infested tree per acre. Since the project area was set up to only include the infested areas north of the Cave Falls road, and all other infested areas south of that road have been allowed to go unchecked, the infestation has spread back into the Calf Creek area. The accomplishments made there are now becoming nullified.

South of the Cave Falls road on the Porcupine District infestations on the Rexburg, Driggs, and Swan Valley Districts have, through necessity, been allowed to go unchecked. They have significantly reduced the merchantable timber volume on those areas. Within the project area north of the Cave Falls road, the epidemic has been held to a low level which has allowed logging to make a significant contribution to the harvest of the larger mature and overmature timber and to the check of the buildup and spread of the insects to uninfested areas. However, the untreated portion of the National Forest and also new epidemic areas in Yellowstone National Park provide a source that will continue to reinfest the project area for several years to come. Only with chemical control can this reinfestation be held to low levels so that the timber can be effectively harvested.

There is sufficient proof by virtue of the one-year (1964-1965) flight on which very little treating was accomplished to show that any relaxing of the control effort on areas selected for major control effort will result in blowup conditions. If control efforts were stopped for one year, as much as a 5 to 1 buildup on the project area would occur and major portions of the areas now at endemic levels would again reach epidemic levels. This would result in the necessity for such large expenditures to control the outbreak, so to speak, that in all probability it would be impractical to continue attempts to save the merchantable timber stands on the Targhee National Forest. Major volumes from existing sales would be killed. The timber industry in this area could not continue to economically operate. It would be ironic after ten years with extremely difficult efforts and major successes to abandon the remaining timber resource to insect attack.

Several methods of artificial control of the bark beetle have been attempted during the course of this suppression effort. During the first years, 1959 through 1963, felling and burning, a limited amount of pushover and burn, felling and sprinkling, and standing burning were attempted as a control measure. All of these methods are known to be more effective than standing-spraying with ethylene dibromide mixed in diesel fuel.

It was apparent that the costs involved were too excessive to justify continuing them. Therefore, the method most widely used was and is spraying the standing infested trees with ethylene dibromide mixed in diesel fuel at a rate of three-tenths of a pound of ethylene dibromide per gallon of mixed insecticide.

Water mix was used at one time, but because of the short season in this area during which freezing temperatures do not occur, it was necessary to use diesel fuel as a carrier for the chemical. Even with that mixture, suppression activities have had to be stopped when temperatures reached below zero. Because ethylene dibromide in its pure form freezes at 40 degrees plus above zero fahrenheit, the chemical solidifies and precipitates out of the mixture at below zero temperatures. At ten below zero, the diesel fuel becomes too thick to pump through hand pumps or power pumps. Therefore, most suppression work has to be carried out during the fall months until about the middle of November and cannot be resumed until about the middle of May. The insects mature and fly during the latter part of July and all suppression activities must be stopped.

The following sections of this account are a year-by-year chronology of the suppression projects carried out in the current epidemic infestation of mountain pine beetle on the Targhee National Forest. Unfortunately, records

prior to the spring of 1964 are practically non-existent. They do show that projects were carried out during 1959, 1960, 1961, 1962, and the spring of 1963.

1963-1964 Project

During the fall of 1963 a relatively minor amount of fell and burn work was carried out on the Rexburg District. A survey also was made of all of the infested areas on the Forest. However, because of the lack of financing, the intensity of the survey was inadequate to show accurately the number of the trees on all infested areas.

The initial planning meeting for the spring 1964 mountain pine beetle control project was held on March 10-18 at the Forest Supervisor's headquarters in St. Anthony. At that time, under a project supervisor's direction, the District Rangers were responsible for the suppression activities on their Districts. They, Galen Trostle, Paul Grossenbach, the Forest Supervisor, and the timber staff people of the Targhee National Forest, attended this meeting. Results of surveys made in the fall of 1963 were reviewed and discussed and available finances made known. It was apparent that funds were not sufficient to treat all of the infested areas on the Forest.

Since the Rexburg District infestation included a large area of infested lands adjacent to the National Forest which could not be treated by the land owners, the decision was made to exclude it from the project area. Available finances would not allow treating that area in addition to all the other infested areas on the National Forest.

The areas planned for treatment were located on the Spencer, Island Park, Ashton, Porcupine, Teton Basin, and Swan Valley Districts. It was further decided that the trees on all large units would be treated by contract. Two small areas on the Island Park District, four on the Teton Basin District, two on the Swan Valley District were to be treated by force account crews.

The Teton Basin crew would treat the Swan Valley areas under the supervision of the Swan Valley District Ranger. Treating organizations were set up, finances planned and contract requirements were discussed. This concluded the initial planning stage.

During the month of April, each District completed their organizational planning and made the necessary preparations for the project. Contracts were prepared in the Supervisor's Office and detailers were contacted. Supplies and equipment were ordered and acquired and the formal plan was prepared and approved by the middle of May. Actual spotting and stringlining work was started on the ground by May 18. Contracts were awarded on May 15 to six contractors. Stringlining and spotting progressed in a satisfactory manner and the contractors were not delayed by our crews.

The spring crews were not able to do much treating until the third week in June due to delays caused by rain and snow and poor road conditions. After the weather changed and the roads became dry, spring crews were able to progress rapidly. Only 48 percent of the trees had been treated by the first of July. The percentage would have been much higher if weather conditions had been more suitable.

Periodic inspections were made in the field by the project supervisor and his assistant. One of the most difficult problems encountered was getting the contractors to spray the trees high enough. The contractors were required to respray a considerable number of trees. We feel that inadequate training and lack of contractor's supervision of spraying crews caused this problem. Field checks which were made by Regional Office entomologists in early July showed that the treating period could be safely extended until July 18. If the

treating period had not been extended, the project would not have been successfully completed. We actually treated 94 percent of the planned trees on 95 percent of the planned area.

The project was not 100 percent completed for two major reasons. We were unable to treat the total planned acreage because of the weather conditions. Also, manpower was not available to complete all work prior to insect flight. The one exception to contractors making every effort to man up was the Spencer District. That contractor made no apparent effort to increase his manpower which resulted in less area being treated than planned on this unit. The surveys made in the fall of 1963 were not financed enough to make an accurate operational survey. In some cases there were very light surveys made resulting in either under or over estimating. This made an appreciable difference in the actual number of trees to be treated. Original estimate called for 70,510 trees to be treated on 43,450 acres. After spotting was completed, it was found that this estimate was too high as far as the planned treating was concerned. After the first of July when spotting was completed, total estimates were revised to 59,988 trees on 40,339 acres.

The project was brought to a close on July 18, 1964. It was our opinion that it was a successful project. We experienced very few problems on the force account work. The District organizations were efficient and well supervised. Manpower was difficult to obtain and retain due to the poor working conditions. Detailers from other Forests who worked on this project were above average. The project supervisors on each unit were commended for a difficult job well done.

There was a balance of fiscal year 1964 funds in the amount of $24,610. This balance was a result of adverse weather at the beginning of the project and

over estimates in costs for the number of trees that were obligated for treatment after July 1, 1964. The poor weather conditions caused enough delay to throw a major portion of the project expense at the fiscal year 1965.

Some of the suggestions and recommendations made in the final report for this project were:

1. That treating appropriations be allowed to carry past the end of each fiscal year to the end of the insect control project.
2. Adequate training should be given in spotting and other work assignments to our crews and better training must be required for the contractors' treating crews.
3. Employment ceilings caused a problem and employment time limitations resulted in our losing some of our key people because their service year was up at a critical time during the treating period.

The Regional Office actually withdrew $34,000 from the Forest sometime during the spring of 1964. Records are not clear as to just why this withdrawal was made. Additional funds in a significant amount were then again offered to the Forest late in June which was too late to use them. All funds were already obligated to the extent necessary to carry out the existing control project. It is impossible to add a significant portion to any going project after the middle of June. The time elements involved in contracting and increasing the organization just does not allow for that type of expansion that late in the fiscal year.

The Forest was criticized for making sales extending over too long a period of time and not requiring immediate cutting of timber sales. Obviously, it can be seen that it was impossible to obtain accelerated timber harvest with the

available market. Even at that time there appeared to be an attitude that control could be accomplished within a short time by logging and chemical suppression projects were only approved as a last resort. As it will be repeatedly shown in this chronology, logging even under an accelerated program, cannot harvest the timber fast enough because of weather factors, access, etc., to remove infested logs from the Forest prior to bug flight. It is absolutely essential in an endeavor such as the Targhee has experienced to correlate logging as a long-term method of bringing about silvicultural control in conjunction with chemical control, repeatedly followed up each year until the problem has been reduced to an endemic state.

1964-1965 Project

The master insect control plan for the 1964-65 Targhee National Forest mountain pine beetle suppression project was prepared and submitted on August 21, 1964. This plan covered planned suppression work for the fall of 1964 and the spring of 1965. The plan was approved on August 31. On the basis of this plan, an aerial reconnaissance was made August 24-27 of the entire Forest and suspected insect areas were plotted. By September 1 plans were completed for an intensive ground survey. Forest funds were not sufficient to complete an intensive survey and additional financing was requested from the Regional Office. This request was denied and an extensive survey was started on September 15. After several discussions with Regional Office personnel, additional funds were made available. These funds made it possible to complete the type of survey that was originally planned. Since there was a delay in receiving funds for the surveys, they were not completed until October 26. This was 11 days later than the date originally planned.

Survey results indicated that there were 183,000 infested trees on 87,000 acres of National Forest and adjacent lands which were infested with mountain pine beetle. This was exclusive of the Rexburg District infestation. Recognizing that a project of this size would be very difficult to complete by the end of the spring 1965 treatment, plans were made to accomplish as much as possible during the winter of 1964-65.

A meeting with District Rangers and project personnel was held on October 26 and fall treating projects were planned. A project proposal was prepared and additional funds were requested from the Regional Forester. These additional funds were received on November 30; however, work was started on a limited scale by November 7 with Forest insect control funds that remained after the surveys were completed.

A chemical treating contract for small projects on the Middle Fork of Boone Creek on the Porcupine District was awarded. This contract was completed on November 23. The other planned projects were started, keeping within available funds. As soon as additional funds were albtted to the Forest, all projects were fully manned. By that time adverse weather conditions had set in and progress was seriously hindered.

One significant factor had been determined by the surveys. Small hot spots were apparent throughout the western half of the Porcupine District. It was realized that this was potentially a very dangerous situation. It was planned to put several crews in that area treating the scattered hot spots. Also, we proposed treating intense new infestations on the private land along the National Forest boundary in the vicinity of Squirrel Creek. The force account chemical treating proceeded according to plan on hot spots and areas of high intensities. The areas planned for pre-spotting were not completed due to snow and poor access. A planned fell and burn project accomplished very little for the same reason. Also, the area which was planned for fell and burn did not prove to have the concentrations of infested trees which were indicated by the surveys. This resulted in too much time being spent looking for trees.

Costs for this method of treatment were excessive and it was terminated after two weeks of operation. The Canyon-Calamity road cleanup was 60 percent completed and the Jackson Mill timber sale preparation was completed before adverse weather conditions brought all insect control activities to a halt on January 15.

On January 8 a meeting had been held at the Supervisor's Office to start planning for spring 1965 insect control projects. It was learned at this meeting that funds would be extremely limited.. The Targhee National Forest would not be financed for a large treating project during the spring of 1965. On the basis of this information, an administrative decision was made by the Forest Supervisor to treat certain high value areas and areas in strategic locations. The decision was based on an alternate proposal presented to the Regional Forester on January 14, 1965, since funds were not available to finance a complete control project.

Verbal instructions to proceed with the January 14 proposal were given by the Regional insect and disease control personnel on March 11, 1965. Part of the pre-spotting work accomplished during the fall of 1964 had to be sacrificed because financing was not adequate to complete the control project on all areas originally planned for treatment. On March 19 a meeting was held in the Supervisor's Office with District Rangers and the project supervisor. Treating plans, equipment and supply needs, etc., were finalized at that meeting. The plan for the spring project was approved and all equipment, supplies, and detailers were ordered by March 31. Two treating contracts, one subsistence, one horse, and one oil contract were prepared and reviewed by the Forest administrative officer, Regional insect and disease control, and procurement and supply personnel. These contracts were awarded by May 24.

All treating work, both contract and force account, was in full progress by June 1. On May 28 the Forest was alerted to the possibility of receiving additional funds for treating. Another treating unit was selected, a supplemental plan was prepared and approved, and the contract prepared and reviewed before the pre-bid conference was held on June 15. The funds were received on June 14.

for
The contract was awarded for chemical treatment on June 24. On June 14, advice was received that the Forest would receive another allotment of funds. Since there was not enough time to prepare, review, advertise, or hold a pre-bid conference and award another treating contract, the decision was made to purchase ethylene dibromide for next fall treatment. This contract was prepared, reviewed, and awarded by June 30. Additional funds were received on June 30.

Spring work included three contractors chemically treating four large units--one subsistence contract, one horse goop packing contract, one oil contract, one chemical contract, and three force account crews chemically treating 11 small units and one moderately large one. No major difficulties other than finances were experienced. Treating weather was good -or the most part throughout the project. All work was completed on July 21 which was before the insects began to fly. No major difficulties were experienced and all problems were solved as promptly as they occurred. Project supervisory personnel did a good job and the project was completed in a satisfactory manner.

The fell and burn project did not produce satisfactory results. Adverse weather, poor access, inexperienced crews, scattered infestation, and other factors caused excessive cost per tree. Had it been possible to start the project earlier in the season, it is probable we would have had better results. By this time timber harvest activities had increased significantly. The final report for this project was submitted to the Regional Forester on September 8.

On October 13 a memorandum was received from the Assistant Regional Forester of timber management complimenting our activities. However, he stated that a tone of defeatism was reflected in our final report and "they realize that

it is discouraging to try to work with fluctuating funds, but this is often the case and we are obliged to make the best use of money that we receive." The only reason that this remark is mentioned here is to point out the apparent acceptance of the inevitability of fluctuating and sporadic issuing of insect suppression funds. Actually, it was quite true that the project personnel felt defeated. This point is brought out here because it is a real factor in the morale and enthusiasm that project people must feel in order to successfully complete these large, complex, and most difficult control projects.

During the 1964-1965 project funds were first refused for an adequate survey, then given to us late. A tremendous amount of work was accomplished in running a survey quickly and thoroughly. The project was started with insufficient funds, then in the middle of the winter all funds were withdrawn or not issued. A revised, very inadequate project was then planned and completed. Yet, at the very latest stages of the fiscal year, significant amounts of money were made available at too late a date to use them effectively. It is common practice on most endeavors, in which Forest personnel are involved, for funds to be allotted at the beginning of a fiscal year so that plans can be made and carried out efficiently. This has not been the case throughout this entire decade, with only one exception. Much effort and money has been wasted, and the spotting work that was accomplished had to be abandoned because funds were not available to complete the planned treating. It is understandable that project personnel had a feeling of being defeated before they ever started. This has had a serious effect on the morale of the organization. Sporadic and inadequate financing, a lack of support at higher levels, continual change during the course of the project year has made it impossible to meet planned objectives and to efficiently utilize allotted funds. In fact, it is and always has been necessary to submit project plans so close to the actual beginning of

the project that they are not in actuality approved until the project was in full progress. A case in point was the project plan for the spring 1965 project was submitted on March 31, 1965. It was not actually approved by the Regional Forester until June 11, 1965 and only then subject to the approval of a multiple use survey report for the project. It has been a fairly common occurrence through the past ten years for suppression activities to start by necessity and then when the project plan is reviewed and returned to the Forest, there was a drastic change in requirements right in the middle of the project. Adequate financing at the beginning of the fiscal year is absolutely essential on large suppression projects, if we are to live up to our responsibilities and efficiently utilize the suppression funds allotted to us.

Fiscal year 1965 suppression funds were utilized in the fullest. There was a balance of $6,000 from funds obligated in June, which occurred because some units under treated in July. There was no way to foretell this underrun in advance.

1965-1966 Project

Funds were received on the Forest at the beginning of fiscal year 1966, to complete the 1965 spring project and carry out all suppression activities through December 31, 1965; the master insect control plan for the Targhee National Forest mountain pine beetle suppression project for fall 1965 and spring 1966 was completed on August 3, 1965 and approved on September 15. On the basis of this plan, an aerial reconnaissance was made on August 9 through 16 of the entire Forest. Supplies and vehicles were ordered for the fall project on August 15. The Washington Office and Regional Office personnel inspected the project on August 31. On advice of Regional insect and disease control personnel, ground surveys were started on August 28. A master insect treating contract was prepared for review on September 17. A planning meeting was held at the Supervisor's Office on September 16 with the project supervisor and other personnel. A training session for checkers and spotters was conducted in the Supervisor's Office and in the field on September 7.

Prior to this project, the District Rangers supervised suppression activities on their District. Because the infestation was so widespread and the proposed project was such an extensive one with a large organization, it was decided that the project area would be divided into four zones. Zone I included the Spencer District infestation; Zone II, the Island Park and Ashton District infestations; and Zone IV, Porcupine infestations; and Zone III, the Driggs and Swan Valley infestations. Zone headquarters were established at Howard Creek, Island Park Ranger Station, Porcupine Guard Station, and Driggs. A zone supervisor reporting directly to the project supervisor was assigned to each zone and each zone had a separate control organization. The project supervisor's headquarters were situated in the Supervisor's Office in St. Anthony.

All ground surveys were completed by October 15 and the first three treating contracts were awarded on October 14. Twenty-one treating units were awarded to 12 contractors by November 29. Four additional treating units were awarded to three contractors on April 12, 1966. Four horse-packing, two subsistence, three diesel, one ethylene dibromide concentrate contracts were also awarded. One fence contract for fencing insecticide dumps was completed and an office at the Driggs National Guard Armory was put under a rental contract.

There was difficulty in obtaining new jeep cans because of the military need for cans overseas. Our estimate of requirements was erroneous because a large number of cans received from other Forests and the insect control warehouse at Bannock had deteriorated to the extent that they could not be salvaged. Also, when treating began, needs were considerably higher than surveys indicated. Most units were treated requiring an increased number of cans in order to maintain production.

The time required for preparation and awarding of contracts was reduced significantly by using a standard approved format and by having the contracting officer present at the bid opening, which made possible the awarding of contracts the same day as the opening.

After all survey results were tabulated and the supplement to the master plan was prepared on October 29 and approved on November 3, 1965, ground surveys indicated that there were 244,000 trees on 111,800 acres of National Forest and adjacent lands which were infested with mountain pine beetle (exclusive of the main Rexburg District infestation). This included lands of all ownership within the infested areas.

On March 22, 1965 a request was made of the Regional Forester for permission to treat alienated lands outside of the National Forest boundary. One of the most disheartening aspects of the 1965-66 project was that approval was not granted unless the landowners contributed 75 percent of the cost. Permission was obtained from the B.L.M. and State of Idaho to treat infested trees on their lands with the Bureau of Land Management contributing $9,500 of suppression funds as their share. State lands were not as significant in the total suppression area. However, there was an estimated 51,500 infested trees on private lands adjacent to the National Forest. Direction was given to us to work out a cooperative program whereby we would pay $1.00 to the landowner, which was approximately 25 percent of the cost of suppression, for effectively disposing of infested trees on their land. This actually resulted in 9,500 trees being removed in this manner.

The main Roxburg infestation was extensively surveyed for evaluation purposes. This survey showed an estimated 585,000 infested trees on 36,800 acres. It was not considered practical to try to chemically treat such a heavy infestation.

All treating was stopped on December 23 due to extremely cold weather and insecticide freezing. Checkers continued work most of the winter months on fell and burn contracts and spotting that was carried on by four contractors. Since stringlines were of such a temporary nature, and because it was obvious that control projects would have to be conducted for several years, it was decided to establish paintlines through the timber for control purposes. A paintline crew worked throughout the winter preparing contract areas for spring treating. Two /Contracted Thiokol snowcats, several snowmobiles, and many miles by snowshoe made the winter work possible.

Plans were begun on February 16 and completed on February 25, 1966 for spring work. A supplement to the master plan was submitted on February 25 and approved on March 18. A meeting was held with all treating contractors on February 25 to outline spring work requirements. All contracts were prepared; supplies, detailers, and vehicles were ordered by March 7. Contracts were awarded on April 12 and spring work began on May 1. One hundred eighty-four miles of road were opened with snowplows to start treating. Training meetings were held on May 15 and May 27 and an initial fund roundup was made on June 7. On June 10 the Regional Forester was notified that a large balance appeared possible. On June 21 a final fund appraisal was made. Due to a heavier than expected overrun of trees to be treated the balance to be returned was not as large as expected. All treating units, both contract and force account, were completed by July 19, 1966. The Forest had an overrun of infested trees of 53 percent above what was estimated from the survey. This overrun was consistent on most of the treating areas. The main reason for the overrun of insect-infested trees was that the beetles were hitting a considerable number of trees after the early fall surveys were completed.

Fell and burn, as a method of treatment, was limited to high value areas such as campgrounds along the scenic loop road on the Ashton District. The relatively low intensity of infestation on other treating areas made this method too costly to use on a large scale. An invitation to bid was ~~adxadx~~ advertised to fell and chemically treat ten treating units. Bids quoted were rejected on nine of the units because the bids were too high. One unit was awarded. The relatively light intensity was the reason for the high bids. All contract treating units were treated standing with that one exception for the reason that chemical spraying proved to be the most practical from economical and time standpoints. The Forest entomologist sample checked all treating units after the end of the project by felling treated trees and checking for emergence on the entire tree.

He found that the treating was very effective and that insect emergence from treated trees was so small that it was insignificant.

Funds were allocated early enough in 1965 to prevent financial difficulties. All units were treated before insect emergence and no major difficulties were experienced. For the most part, weather was unusually good during the fall and spring project periods. We were able to treat later in the fall and earlier in the spring than had been experienced in previous years.

The following tabulation shows the percent of treating by the methods used:

Method of Treating	Percent
Chemical spray	71.1
Fell and sprinkle	2.3
Fell and burn	.4
Logging	23.8
Coop treating by logging	2.4
TOTAL:	100.0

The project experienced no major difficulties and all problems were solved promptly as they occurred. Project supervisory personnel did a good job and the project was completed in a very satisfactory manner. All camps, insecticide dumps, and field offices were secured, detailers released, and borrowed or rented vehicles were returned by July 29, 1966. The project was considered closed on that date. All contracts for the project were completed and no default actions were necessary.

A new insecticide dump was built during the fall of 1965 at the Rapid Creek administrative site near Driggs. This provided two main sources of supply for insecticide; one from the Island Park Ranger Station and one from the Rapid Creek location.

Two timber sales were offered at reduced rates on the Rexburg District for a total of 1½ million board feet but no bidders responded. One of the needs at that time was for more lodgepole pine mill capacity to handle the Forest's allowable cut in the volumes of insect infested timber that urgently needed removal. During 1965, the Forest actively sought more outlets for timber. Donna Timber Company stud mill of West Yellowstone, Montana had not been previously interested in the Targhee working circle. Two sales which had received no bids locally were negotiated to this company. The company also took over a third sale by third party agreement.

A continuous effort by the Forest was under way to seek other market outlets for lodgepole pine. Purchaser interest in sales on the Rexburg District declined because of the large volume lost to the insects. Two of three sales offered received no bids. The chief reasons appeared to be low volume per acre and inadequate logging capacity. The logging activity on insect sales during this project was variable. During the spring of 1966, it appeared quite aggressive although purchasers had a great deal of difficulty completing sales by the termination date. As an incentive measure, the Forest offered two sales at reduced rates under Administrative Use S-24. Both of these sales were offered at 50 cents per thousand. As a further incentive, the Forest introduce a new rate policy in 1965. Lodgepole timber sales sold at 50 cents per thousand had a contract provision that the stumpage rate would increase to $2.00 per thousand for timber cut and scaled after a certain date. This date was coordinated with the new beetle flights and the chemical control program. Practically all of the lodgepole cut on the Forest during the control project between August 1, 1965 and July 30, 1966 came from insect-infested timber stands. This amounted to approximately 19,000,000 board feet. The number of infested trees removed during the period was 88,050. Insect control funds were used to supplement

regular timber funds when sales were made for insect suppression. In F.Y. 1966 the Forest sold 167 percent of the volume that was financed with 031 funds. Approximately $12,000 of suppression funds were used for this purpose. Insect control sales were selected on a high priority basis and stands of lodgepole which had already reached epidemic proportions received priority No. 1. Second priority was given to stands adjacent to heavy infestations. These stands usually had light infestations with a heavy buildup potential. Past experience indicated that these stands were epidemic by the time they were logged. Clear-cutting was the primary method employed and residual slash was machine piled and burned.

F.Y. 1966 funds ended up with a balance of $879.00. This balance was due to lost jeep can assessment made from each contractor at the end of the project for work completed after the end of the fiscal year. The project was carried out efficiently and resulted in a significant reduction in the cost per tree for chemical treating.

A study was made during the course of this project to determine practicality of complete cleanup and burning of insect-infested trees in travel influenced zones. All infested trees within 100 feet of the scenic loop highway from the Forest boundary to above Mesa Falls were felled and all debris completely cleaned up. Conclusions were that the cost for that work was more than double the cost of treating by other methods. It was difficult in some areas to keep from scorching adjacent trees and it was too time consuming and tied up crews that could be treating more trees per day by other methods.

Road construction accomplished that contributed considerably to the success of the project consisted of four roads for a total of 20 miles of new roads. These were paid for from FR&T funds. Four hundred and fifty miles of existing

Forest roads were maintained and snow removed with insect and disease control funds.

Conclusions and suggestions included in the final report for the project were:

1. That treating appropriations be allowed to carry past the end of each fiscal year to the end of the insect control project in July.
2. That the cooperative program with privated landowners on lands outside and adjacent to the National Forest boundary resulted in 16 percent success and that such infestations as were now on the Targhee, should be treated in their entirety regardless of ownership of lands for the most effective and economical control.
3. Pure ethylene dibromide was mixted into insecticide at the suggestion of Regional Office personnel. Extreme difficulty resulted in using it during the fall, winter, and spring months on the Targhee because of its high freezing point. During these months almost every night brings temperatures at or below the freezing point of the chemical. We recommended that only EDB concentrate (6 lbs. per gallon) be used in this area.
4. We suggested that the contracting officer be present at all major treating bid openings for awarding and other necessary actions. We suggested also that every effort be made by research personnel to determine a faster, more efficient method of treating insect-infested trees. We also suggested that the new developments towards sex attractant for bark beetles be vigorously investigated.

Again during the course of this project all treating was delayed because of time consumed in contract preparation and awarding. On one occasion a Regional contracting officer was not allowed to travel to this Forest because of efforts to reduce the amount of travel. Later he was allowed to travel here to expedite contract awarding. Specialized contracting services should not be restricted too freely for this type of emergency project when time is of the essence.

Delays in procurement probably turned out to be the largest single deterrent to a greater amount of fall treatment. Supplies were ordered as far in advance as possible, but this cannot always be done in full quantity because of limits of funds. GSA personnel obviously were not aware of the urgency of obtaining jeep cans which were needed before we could award treating contracts. We also experienced a great delay in receiving tree ~~making~~ marking paint. A zone supervisor was transferred in the middle of the project which resulted in a vacancy in control project leadership at a critical time. Everything considered, the 1965-66 project was probably the most efficient experienced on the Targhee and all objectives were obtained as planned. The most serious factor affecting the success of the suppression efforts, however, was our inability to treat entire infestations regardless of landownership. We expected and there occurred a heavy reinfestation of National Forest lands from privately owned timber adjacent to the boundary.

1966-67 PROJECT

An initial planning meeting with zone supervisors, project personnel, staff, Forest Supervisor, and Regional Office I&DC personnel was held on September 1-2, 1966. It was decided to make a reconnaissance on all areas of infestation, start force account treating, prepare and award the first treating contracts, and prepare all other treating units without a survey. The first eight contract units were awarded as contracts for spotting and treating. The reason for that decision was to start work as soon as possible rather than wait until the lengthy survey or spotting job was completed. An aerial reconnaissance was made by Regional entomologists. Upon their advice, force account treating was started by September 15. First treating contracts were advertised on September 15 and awarded on September 20. Initial plans were completed on September 12. Funds had been received on the Forest at the beginning of the fiscal year to complete the 1966 spring project and to initiate the fall 1966 project, and supplies and vehicles were ordered on September 9. There was an inspection by Regional I&DC personnel of the control activities on August 25. The master plan for the project was submitted on October 21 and approved after revisions on January 13, 1967. Field training sessions were held for checkers and spotters on October 12-15.

Approval was given by the Washington Office on September 27, 1966 to exceed the limitations for treating infestations on private lands adjacent to the National Forest boundary. It was finally recognized that infestations on private and State lands, both inside and outside the National Forest boundary, were jeopardizing the effectiveness of our control work and must be treated. Approval was given to exceed the 10 percent limitation and to treat regardless of land owner contribution with the understanding that in no case would 20

percent of the total project suppression cost be exceeded for work on alienated lands.

Eleven contracts were awarded for treating standing and nine contracts were awarded for felling and treating infested trees. A packing contract, subsistence contract, two diesel oil contracts, and an EDB contract were also awarded. The last treating contracts during the fall period were awarded on December 7, 1966. Eleven additional units were advertised on December 30; however, these units were not awarded because of lack of funds.

We had difficulty in obtaining experienced detailers and vehicular equipment from other Forests. The unusually long fire season required other Forest Supervisors to keep their personnel until late in the fall. There was keen competition for manpower throughout the Upper Valley between the Forest Service, treating contractors, and farmers at harvest time. During the latter part of November and during December some of the most experienced men had to be terminated due to employment limitations.

The original estimates of infested trees and acres were based on entomologist advice and past experience on expected buildup. Estimates indicated that there were 383,100 trees on 144,850 acres of National Forest and adjacent lands which were infested with mountain pine beetle (exclusive of the main Rexburg infestation). Lands of all ownerships within the infested area were included. The main Rexburg infestation was surveyed by a Regional entomological team in September. Indications were that there were approximately 700,000 insect infested trees on 36,000 acres of that infestation. It was not considered entomologically or economically sound to treat this infestation and it was excluded from the project area.

By the middle of December enough of the pre-spotting work on the project area was completed to show that original estimates were extremely conservative. The entire estimate of infested trees on the project area was necessary. On January 3, 1967 the Regional Office was informed that there were in excess of 700,000 infested trees on the area planned for chemical treating. A meeting was held at the Regional Office and it was decided to curtail nearly all treating activities as soon as possible. Finances for continuation of the large project were not available.

The project was reduced substantially on January 25 with all detailers and vehicles returned by February 6. A small force of 28 men on two zones continued to spot, paintline, and prepare new units for anticipated spring treating contracts. During February and March the project was revised to fit available financing. The areas to be treated were selected on a basis of the various values involved. It included an estimated 588,500 infested trees on 195,000 acres of National Forest and adjacent lands.

Zone 3 was eliminated and Zone 4 assumed responsibility for the Rapid Creek insecticide dump and the five contract units south of Bitch Creek which were on Zone 3 that had been awarded and were in progress. Supplement No. 1 to the project master plan was prepared for the revised project and was submitted for approval on March 23, 1967. Detailers and vehicles for the spring project were requested on March 20. By April 4 the first spring treating contracts were advertised and supplies ordered. These contracts were awarded on Mayl and the first treating was started on May 3. All field preparation and treating units were completed by May 15 and all remaining treating contracts were awarded by June 8. By June 10 a total of 59 contract treating units and 11 force account units were in progress

or completed. There were 39 treating contracts, three contractors who took over defaulted units, and two negotiated contracts for smaller, additional areas of infestation that were not included in the revised project area, for a total of 44 separate treating contracts. Two field training sessions were conducted on each zone on May 11 and 29 for checkers and contract supervisors.

Fund roundup meetings were held in the Supervisor's Office on June 6 and 20, and the Regional Forester notified of surplus of funds. All treating was stopped on July 31 because of insect flight. Fifty-seven contract treating units were completed and two were mostly completed by this date. All force account units were completed prior to insect flight. The Forest entomologist sample checked all units after treating by felling treated trees and checking for emergence on the entire tree. He found the treating was very effective and that insect emergence from treated trees was so small that it was insignificant. Weather during the spring project was unusually wet and unfavorable to treating operations. For example, there were 20 straight days of rain during June. Roads were practically impassable except with 4-wheel drive equipment or crawler tractors. The Forest road crews did an outstanding job of opening, spot-graveling, and maintenance of roads under very adverse conditions. Their efforts made access possible where otherwise the project would have come to a halt. The spring weather was the most serious problem encountered. Also, three contract units had to be defaulted resulting in two units not being completed. For the most part, all project personnel did a good job and the project was completed satisfactorily. The two units that were not completed only lacked areas of relatively light infestation and were adjacent to large infested areas that were not included in the project.

All camps, insecticide dumps, and field offices were secured and detailers and rented equipment returned or reassigned by August 15 and the project was considered closed.

At the close of the project opinions were that there would be at least a 2 or 3 to 1 buildup on Zone 4 from the large infested area that was not treated on Zone 3. Also, it was felt that the Teton Basin, Pine Creek, and lower area of the Swan Valley District would have infestations of very heavy proportions after the 1967 flight was completed.

The following tabulation shows the percent of accomplishment by methods used:

Standing spray	83 percent
Fell and Sprinkle	5 percent
Fell and Burn	4 percent
Logging	8 percent
Total	100 percent

There was a balance of FY 1967 funds in the amount of $17,720. This balance was caused by the failure of one contractor to complete his units. Also several units underrun which could not be anticipated prior to the end of the fiscal year. A considerable amount of treating unit preparation was completed on Zone 3 prior to the reduction in size of the project in January, 1967. $275,000 had been expended for this work. Because of the failure to completely finance suppression on all units of infestation that had been originally planned, this work was wasted. All attempts to obtain cooperative financing from State and private landowners were unsuccessful. Therefore, all treating of infested trees on alienated lands was carried out at Government expense, as authorized, with landowners' permission. A total of 107,500 trees were treated on these alienated lands.

This project experienced above normal snow conditions during the winter and late spring. When the snow melted there were prolonged periods of rain and muddy road conditions. Access was very difficult from the middle of November, 1966 through June of 1967. Due to the efforts of the Forest Service road crew, the main roads were kept open throughout most of the winter. They also graded, graveled, and drained all access roads continually during the spring. Roads were often impassable and maintenance was very difficult. However, due to road crew efforts we were able to continue operations throughout the spring. A total of 600 miles of road were kept open most of the winter which necessitated approximately 2,000 miles of snow removal at a cost of $50,000 from I&DC funds. Two-hundred and fifty miles of road were greaded and spot graveled during the spring at a cost of $10,000 of insect and disease control funds and $12,000 of FR&T funds. Nine roads were constructed or resurfaced and drained which benefited the project at a cost of $21,300 of I&DC funds and $77,400 of FR&T funds.

Some of the suggestions made in the final report for this project were:

1. That treating appropriations be allowed to carry past the end of each fiscal year to the end of each suppression project.
2. That Civil Service be asked for relief from employment time limitations. Valuable trained personnel were laid off throughout the project due to employment limitations. New men had to be hired and trained. Sometimes they were not available when needed. Such practices resulted in breakdowns of contract administration and other vital works. Appeals and controversies with contractors were sometimes the result.
3. That a training meeting be conducted for COR's and inspectors;

Also, clear concise instructions for these insect control COR's and inspectors should be prepared and presented to all personnel engaged in contract administration.

4. That a planning meeting be held in the Supervisor's Office with Forest Supervisor, staff, Rangers, and project overhead prior to the beginning of the next project. Such a meeting is necessary to clarify plans and responsibilities of each as far as insect control is concerned. There was definitely a need for a meeting of minds so that proper coordination could be incorporated into insect control plans.

A lack of coordination was experienced in timber sales and road construction during the project period. Increasing demands on project personnel with cleanup and rehabilitation work on campground and special areas in roadside zones, etc. seriously cut into the available manpower assigned to the project. It was also suggested that District crews take over excess clean-up work because the insect control organization had its hands full with the treating and contract administration. It was also suggested that treating contractors should not be required to do such cleanup work as it tended to unnecessarily complicate contract administration and seriously slowed their progress. Each District Ranger had a different idea of what he wanted as far as camp and corral clean-up was concerned. Only reasonable clean-up of these contractor camps and corrals could be required of the contractor. If a Ranger wanted additional beautification work, it was felt that this should be a Forest Service job and not an additional expense to the contractor.

There were two defaults of insect treating contractors during the course of this project. Both of these defaults were a direct result of the contracting people not attaching enough importance to the project supervisor's

recommendations. In one case the contractor had a very poor performance record on the Teton National Forest. On the basis of this record, recommendations were made by the project supervisor against awarding him another contract on this Forest. In the case of the other contractor, it was the opinion of the project supervisor that the low bid included an excessive amount of work and that he could not possibly complete it. Both of these recommendations proved to be well founded. Throughout the course of the past ten years, contracting people in Ogden have not appeared to attach enough importance to the recommendations and experience of project supervisory personnel. Many contracting problems could have been avoided if questionable contractors were not awarded large treating contracts. Also, in the case of new contractors, experience has shown that they should not have been awarded large contracts. In other words, they should break in easy. No implication is intended that new contractors are not able to successfully complete contracts. However, there is substantial evidence to show that, if they over-extend themselves, they inevitably get into trouble.

1967-68 PROJECT

A preliminary project plan was prepared for the 1967-68 project during the last week in August of 1967. The objective of that plan was to treat all mountain pine beetle infested trees on the Targhee National Forest and adjacent lands except for the main Rexburg infestation. This plan was submitted to the Regional Forester on September 1, 1967.

A reconnaissance survey was made on 15 selected units during the first two weeks in September. It was found from these surveys that there were over 2,000,000 infested trees on the proposed project area. Buildup ratios were at least 5 to 1 on some of the areas eliminated from the last project in January of 1967. On September 5 a planning meeting was held with the project supervisors, the timber management branch chief, and Regional I&DC personnel. Instructions at that meeting were to limit the size of the project to 400,000 infested trees. In order to stay within that limitation, and still conduct an effective treating program, it was decided to treat all epidemic infestations on or adjacent to the Targhee National Forest that were north of the Cave Falls Road. Conclusions were that if any parts of the area north of the Cave Falls Road were sacrificed, effective control would not be possible anywhere by present treating methods. Plans could not be put into effect nor could the majority of the work be started until October 18 because a major portion of financing for the project was not received until that date.

Supplies, manpower, and vehicles were ordered by September 9 and reconnaissance survey was completed by September 15 and ground surveys were started on October 2. Spotting, oil, EDB, and subsistence contracts were awarded on October 9 with funds available from the last project. Most of the manpower was on hand by October 8 and surveyors and checkers were trained on October 10

and 11 by Regional Office I&DC branch personnel.

Contract spotting was not started until October 23 because of the delay in receiving funds. A month of good weather was lost because of that factor. Force account treating was not started until October 15 for the same reason. The spotting contracts were completed by NOvember 10 and treating was started on these units by NOvember 15. All planned spotting and survey work was completed by December 1. A two and one-half month delay in receiving tree marking paint from GSA slowed progress in paintlining. The master plans for the project were prepared on October 12, recommended by the Forest Supervisor on NOvember 2, and submitted to the Regional Forester on November 6. It was approved by the Regional Forester on December 7, 1967.

Six spotting, eight standing treat, and seven spot and treat standing contracts were awarded on 25 treating units prior to December 1, 1967. The last treating contracts awarded during the fall were started on NOvember 15.

On December 13 a meeting was held in the Supervisor's Office. All spotting and survey results were analyzed. It was determined that there were 440,000 infested trees on 67 treating units within the project area. Regional Office personnel attended this meeting and were informed that finances were not sufficient to complete the porject as planned. In the interest of economy all work was stopped on December 22 and all men and equipment returned to home units by December 31. No major problems were experienced in the fall of 1967 except delay in receiving funds.

A supplement to the master plan was prepared by December 31 for work to be

accomplished from January 1 through July 31, 1968.

Several of the main access roads were resurfaced, drainage was improved and maintenance was done on most of the other roads on the project area. By December 1 all main access roads were cleared of snow periodically. This work was carried out by the Forest road crew with gravel hauling done by contractors. Access to the treating areas was significantly improved and the cost from insect control funds was $177,300.

Plans for the spring portion of the project were completed by January 9, 1968. It was decided to keep a small crew of 28 men paintlining the new treating units. Treating on those areas was contingent upon more funds being available, but it was essential to the progress of the spring project work to complete unit preparation prior to May 1. Forty-two additional contract treating units were prepared for advertising by February 29. Detailers, supplies, and vehicles were tentatively ordered based on the assumption that we would receive adequate financing by the time the weather would permit resumption of work. It was necessary to award the remaining treating contracts in groups of units of 15, 15, and 12, due to piecemeal allocation of funds. In fact, we were unable to award the last group until the latter part of May for that reason. Treating work commenced on a few of the more accessible units as planned on May 1. Regional Office I&DC branch personnel conducted several training sessions in June. This was very helpful because the detailers sent to us for this project included a significant number of inexperienced personnel.

The early part of May was reasonably good weather, but by the last week of May and continuing into the early part of July there were over 40 days of rain or wind, or both. Production was seriously affected and access was

practically impossible at times. By the end of June the project was only 37 percent completed. The weather and delay in receiving finances were the primary problems affecting the project, especially during the spring. These factors resulted in less money being spent in FY 1968 and more of FY 1969 funds expended than originally planned. The July portion of the project actually ended with a deficit for those reasons.

Fund roundups were held on the first and third Tuesdays in June and the Regional Office notified of the surplus of FY 1968 funds. Because of the poor weather and access during June and early July, contract time extensions were granted to all contractors. This allowed them to complete their contract work on time with one exception. That contractor was defaulted on three units on two different contracts. All three units were not completed but they were lightly infested portions in all three cases.

Major insect emergence occurred on July 29 and the project work was halted on that date. The project was considered closed on August 15 when all camp cleanup was completed, detailers and vehicles returned, and facilities closed down.

The major problems encountered were inexperienced personnel, sporadic financing, and unusually wet and windy spring weather which made in impossible to treat chemically for significant portions of May, June, and July. Access was seriously hindered during that period. No contract treating was accomplished prior to NOvember 1, 1967 or after July 29, 1968.

There was a serious lack of coordination between timber sale activities and treating work during the course of this project.

Legal complications were only narrowly avoided because of this.

There were six spotting contracts, eight contracts for spraying only and 40 spot and treat contracts on 67 treating units. Thirty-four contractors held those contracts. Also three other contractors held the oil, EDB, and subsistence contracts. One treating contractor was partially defaulted on two separate contracts. A negotiated contract for the remainder of one was awarded. No substitute contractor could be found to take the other units.

Considerable difficulty was experienced in obtaining qualified detailers for the spring project. In some cases inexperienced temporary people were hired by other Forests and sent as detailer overhead. There were five cases of poor performance reported. All of these were off-Forest detailers.

There was a balance of FY 1968 funds of $103,400. This resulted from the poor weather and the fact that the majority of the trees had to be treated during the next fiscal year. Heavy expenditures for ethylene dibromide and diesel oil were necessary out of FY 1969 funds. If funds had been allowed to carry over, those items could have been purchased out of FY 1968 funds.

A total of 30,300 infested trees were treated on alienated lands within and adjacent to the National Forest boundary. The main reason for less trees being treated on such lands was because there is less of that type of land adjacent to or within the National Forest boundary north of the Cave Falls Highway.

Originally an additional 11 units were proposed to be treated south of the Cave Falls Road. This would have provided an adequate buffer between the uninfested areas of timber and Yello-stone National Park. Finances would not

allow including those units and they were excluded from the project.

Three hundred and fifty miles of road were kept open until the project was closed in December of 1967, and also when they were reopened in May of 1968. This necessitated approximately 800 miles of snow removal at a cost of $27,000 of I&DC funds. Two thousand thirty-eight miles of road were maintained for the benefit of suppression activities at a cost of $55,500 of I&DC funds and $27,900 of FR&T funds. There was a total of 112.6 miles constructed or resurfaced and drained which benefited suppression work. Cost from insect and disease control funds was $94,000 and $345,100 of FR&T funds.

Recommendations made in the final report for this project were:

1. Treating appropriations should be allowed to carry past the end of each fiscal year to the end of each suppression project.
2. Because of the wide variation on a per unit basis of the accuracy of the estimated number of trees, a guarantee of 75 percent of the estimated number of infested trees, based on a total contract estimate, should be made.
3. That a training session be conducted for COR's and inspectors of the highest level including legal advice.
4. That relief from Civil Service on employment time limitations be sought.
5. That project funds be allotted to the project at the beginning of the fiscal year. It was impossible to meet work schedule deadlines, maintain production, and award contracts on time under the sporadic system of alloting funds to insect control projects. When a Form 5200-10, Project Proposal, is approved and the project initiated it is only logical and proper to completely fund it as approved at the beginning of the fiscal year.

Delays and sporadic financing have continually seriously jeopardized the successful completion of large suppression projects such as have been carried out on the Targhee National Forest for the past ten years.

It was also again recommended that the project supervisor be included in Supervisor-Staff meetings where decisions were made affecting the suppression project. He is probably the most informed employee on the overall status of contract treating progress and the general scope of treating work on the Forest. The failure to seek his advice has sometimes resulted in possibly lack of coordination between insect treating work and other activities. A case in point was the reconstruction and right-of-way clearing on one of the main access roads to five treating units during the course of this project The road was closed at a critical time and major claims for damages from treating contractors were only narrowly averted. Had proper coordination been in existence between the project and engineering department, a convenient time schedule could have been arranged. Also timber sales were made on treating units that were already under contract for treating infested trees. At least in one case, adjustment in bid price was necessary to compensate the treating contractor for pre-spotting work and for infested trees he could have treated had they not been logged. Also, a serious safety factor developed on several areas because of falling trees on the cutting areas where treaters and pack strings were also working. Proper coordination could have eliminated these problems. Participation in appropriate Supervisor-Staff meetings would be of great value in the proper planning and conduct of these large and complex suppression projects.

1968-69 PROJECT

The 1968-69 Targhee bark beetle control effort was inititated during the last week in August, 1968. At that time it was decided to conduct a statistical survey of the infested area included in the 1967-68 suppression project. The survey was started on September 3 and completed on September 20, 1968. In addition to Forest personnel, entomologists and foresters from the Timber Management Division of the Regional Office were detailed to assist with that phase of the new project. Survey results were compiled during the last week of September and several alternative project proposals were considered. After analysis of the survey data and considering the timber harvest possibility the area of infestation north of the Cave Falls Road and east of U.S.Highway 191 appeared to have been reduced to an endemic level, and considering the need to protect the proposed Warm River timber sale area, it was felt that to further reduce the size of the proposed treating project area would not be practical from a control standpoint and suppression results could not justify the cost.

On October 11, 1968 the Regional Forester proposed to the Chief that chemical treating projects be conducted on the area described above for the next five years in various stages. Treating was to be closely correlated with timber harvest and the size of the treating project was to be reduced each year as the timber cutting progressed. No further decisions were reached for the remainder of 1968. Project supervisory personnel conducted insect buildup studies and brood analysis on all infested areas of the Forest during December, 1968 and January , 1969. Because of the close inter-relation of the proposed chemical treating program and timber harvest, it was felt by others that the treating project could not be approved until the Warm River timber sale was sold. Since the sale was not due to be advertised

until the first of May, the decision was made early in March to start paint-lining crews preparing treating units. Further delay would have made it impossible to complete marking units on the ground, mapping, etc., prior to the treating season. These crews started work on March 17, 1969 and actually completed retagging, repaintlining, and mapping of 42 units, and putting in lines and boundaries on four new units by May 3.

One new units was not prepared until June 24 due to difficult access conditions. During the period of May 3 to June 15, it was impossible to reach the unit because travel could not be accomplished over the melting, rotten snow. The lines actually had to be run after the snow had disappeared. With that exception, all of the unit field preparation was accomplishe on snowshoes and snowmobiles. There were five paintline crews with five men each. Snow depths reached 10 feet on most areas, but working conditions were good due to the ease of access made possible by using the snowmobiles.

Even though the project was not approved as yet, a project plan was prepared and submitted on April 11. A bid invitation was advertised on April 10 for spotting and treating 47 treating units which included an estimated 247,500 infested trees on 165,000 acres. The final approval of financing for the project was made on April 28. Bids were opened on that date and awards made to 20 contractors on May 2, 1969. Oil and EDB contracts were also awarded during the first week in May and pre-work conferences with all treating contractors were conducted also during that week. Detailers arrived on May 12 and the men were organized into crews. The entire week of May 12-16 was spent in training checkers and foremen. The training was conducted by Regional Insect & Disease Control and project supervisory

personnel. Contract spotting and treating were started on May 19.

The weather was generally good until the second week in June. Then a two week period of heavy rain and snow occurred. Most production stopped until the last week of June. Sporadic rain and wind plagued the project until July 22 and it was not completed until July 27. By the end of June treating work was only 45% complete.

The weather and delay in receiving approval and finances resulted in less money being spent for fiscal year 1969 than originally planned. Fund round-ups were held on the second and fourth Tuesdays of June and the Regional Forester notified of the surplus of fiscal year 1969 funds.

Because of poor weather and access conditions during June and early July, contract time extensions were granted to all contractors. Even so, five of them paid liquidated damages because they were unable to complete their contract work on time. All treating units were completed before insect flight with one exception. The beetles emerged from trees on the lower elevations of Flat Canyon unit on July 26. Contractors were given a stop-work order on that date. Two-hundred acres on which there were an estimated 800 infested trees were not completed. The beetles did not mature enough to emerge on the other units prior to completion of treating. All detailers were sent home on July 27 and rental vehicles were returned by August 15. Camp clean-up was completed, facilities closed down, and inspected by August 19, 1969 at which time the project was terminated.

The major problem encountered was the lateness in receiving approval and financing for the project. It was impossible to accomplish planned production on time. If insect flight had occurred as expected, we would not have

completed the project by 33%. The contractors experienced considerable difficulty in obtaining enough experienced help. This was apparently due to the drain of manpower from the area by the Vietnam war. Although most of the contractors completed their contracts, the time limitation within which work had to be accomplished resulted in one contractor being partially defaulted and necessitating a procurement, one contractor being unable to finish prior to insect flight, and five others being assessed liquidated damages for failure to complete on time. Even with the handicaps of time limitation, labor shortage, adverse weather and so on, the treating was 99.9% completed between the dates of May 19 and July 27,

A total of 251,150 acres was surveyed by Forest Service crews during September of 1968. Survey results indicated there were approximately 300,000 infested trees, on the selected project area, plus or minus 19% or 57,000 trees. After carefully reviewing each unit, the project supervisor and zone supervisor selected an estimate of 247,500 infested trees. No chemical treating was accomplished prior to May 19 nor after July 27, 1969. The percentage of accuracy of the contract estimate of infested trees was 96.7% considering the infested trees removed from the infested areas by logging in addition to those chemically treated. There were 22 spotting and treating contracts including two that were reprocurred, one diesel contract, one EDB contract, one snow machine contract and two vehicle contracts. Twenty treating contractors were involved in treating 47 units.

A safety and hazard analysis plan was included in each project plan for projects conducted on the Targhee National Forest since 1964. Each zone was always assigned a safety and quality control officer who was assisted by a training officer. Safety meetings were held and documented at

the beginning of eacy week. All quality and control and safety inspections were documented weekly and copies provided to project supervisor and Timber Management Branch Chief. Each crew was inspected at least once a week by the safety and quality control officers. Safety and quality control duties were the combined responsibilities of the officer assigned to that position because of the close relationships involved. The training officer continually provided additional instructions when the periodic inspections indicated a need. Quality control efforts were organized to check contract and force account work as follows:

1. Project Supervisor - Sample checks on the entire project and follow-up on weekly reports and report to the timber management branch chief.
2. Zone Supervisor - Systematically ch-ck zone work and report to project supervisor.
3. Quality Control and Safety Officer - Systematically check contract checker crews and report to zone supervisor.
4. Assistant Zone Supervisors - Systematically check work of assigned crews and report to zone supervisor.
5. Checker Foreman - Check crew work and contract work on assigned units and report to the assistant zone supervisor.
6. Checkers - Check contract work on assigned areas and report to checker foreman.

This type of organization varied somewhat through the years, but essentially quality control and safety efforts were conducted along these lines.

The 1967-68 project consisted of only two zones - one located at the Porcupine Guard Station and one at the Island Park Ranger Station. The 1968-69 project consisted of only one zone. A zone office was set up in the old Ashton District Ranger's Office and all field operations were conducted

from that headquarters. The project supervisor has remained in the Supervisor's Office in St. Anthony throughout the course of the various projects. For the most part, the project supervisor has been COR on all of the treating contracts. However, during the 1966-67 project a COR was provided on each of the two zones. Actually, this robbed the project supervisor of needed authority in dealing with contractors and the practice was discontinued after that project. After that project it was recognized that the project supervisor should have full authority to supervise both the Forest Service organization and contractors. He, therefore, has been designated COR on all treating contracts since that time.

Generally speaking the safety record for the Targhee insect control projects has been outstanding. During the past ten years, there has been only one serious accident with Forest Service personnel. The 1968-69 project was outstanding in that the injury frequency and vehicle frequency of accidents were both zero. Considering the difficulty involved and adverse working conditions on these treating projects, this is little short of astounding Strong efforts with respect to safety and corrective measures were taken in every case where possible to eliminate or reduce hazards. Surprisingly enough, there have been no fatalities throughout the 10-years of insect control activities on the Targhee National Forest. A grizzly bear attacked a contractor and two treaters during the 1966-67 project, causing extremely serious injury but all recovered and have suffered no ill effects.

Although detailers were sent that were largely inexperienced during the spring of 1969, they were some of the best that worked on the Targhee and most of them carried out their duties in an outstanding manner. There was

only one case of misconduct and the man involved was returned to his home Forest prior to the completion of the detail.

Qualification cards were issued to each checker and checker foreman based on demonstrated ability and performance.

The method of financing this project was no different than has been experienced in the past. Allotments were made as follows:

8/21/68	$133,786	to complete the 67-68 project
9/5/68	53,400	for fall survey and additional costs of the 1967-68 project completion
1/20/69	27,095	insect control overhead salaries.
3/24/69	51,460	for paint lining and unit preparation.
4/28/69	900,000	spring project and constract costs.
5/20/69	5,000	to State of Idaho Cooperative Funds
6/6/69	170,000	balance of requested funds not received on previous allotments

There was a balance of $182,212 of fiscal year 1969 funds. The initial request was based on the results of the fall survey which indicated 300,000 tree treating project. There was a considerable underrun from this estimate when the units were actually treated. Also, adverse weather conditions during June for the significant amount of the project expense to be necessary during July which had to be paid out of fiscal year 1970 funds.

The Idaho Department of Public Lands Commissioner gave permission to the Forest Service to treat infested trees on certain Idaho lands within the Targhee National Forest. He also provided $5,000 of cooperative funds to help finance the treating of those trees. Permission was also obtained by written agreement with private land owners to treat infested trees on their land. This was done on 10 areas of private land within or adjacent to

the Targhee National Forest project area. There were a total of 4,092 infested trees treated on alienated land within or adjacent to the Targhee National Forest.

The trend for the project area appears to be down by about one-third from the previous years attack. The areas on which an apparent increase in numbers of infested trees occur are located between US 191 and the Henry's Fork of the Snake River, the Flat Canyon-Trail Canyon area, the area immediately adjacent to the heaviest infestation inside Yellowstone National Park, and some of the new units on the northern edge of the project area. These locations have a high percentage of the largest mature trees that are found within the project area.

The winter of 1968-69 was above normal snow conditions; however, paintlining and unit preparation did not begin until March. It was unnecessary to keep roads open during most of the winter. The upper and lower five miles of the Mesa Falls Highway and the lower half of the Fish Creek Road were opened for the paintlining work in March. Since snow machines were used for the unit preparation, it was not necessary to open more roads until the first of May. All main access roads were plowed prior to the beginning of treating work and after plowing, these roads were graded and graveled and drained wherever possible on the project area continually during May and June. Main roads were often impassable because of the mud. Forest road crews were commended for their fine efforts as they materially contributed to the success of the project. However, as has been pointed out on other projects, there was an abundance of funds remaining at the end of the fiscal year. An attempt was made to utilize a portion of these funds in reconstructing the Warm River road. It was one of the main access roads to several treating units and a major portion of the Warm River Road was torn up for reconstruction. No coordination was made with the treating project work

by the Forest Engineer or the Ranger. Prior to this work the road was rough, but passable and treating contractors were able to work from it. However after reconstruction work started, the road became impassable necessitating as high as three miles of packing by horse of insecticide along the road to reach treating areas. Major controversies with the contractors involved were narrowly avoided only through the granting of time extensions and other considerations to the contractors and no litigation resulted.

Such action illistrates again the lack of coordination between other activities on the Forest and the insect control project. The fact that insect control funds do not carry over to the end of the project sometimes creates a frantic effort to expend funds before the fiscal year ends and also creates a deficit of funds during the month of July in the new fiscal year. This has been repeatedly pointed out. It is a mystery why insect control funds cannot be set up so that they carry past the fiscal year until the end of the treating project. It has been explained that this is impossible. However, in fiscal year 1963 funds were carried over into the next fiscal year and actually expended in the spring of 1964. The Forest Service can accomplish most anything if total support and effort is given at all levels. It would appear that it is not a case of being impossible to set up funds in the manner that we recommended, but rather the old established system has been in effect for so long and since it is actually a national system that does not necessarily only apply to the Forest Service, there is a great reluctance to tamper with it in any way at higher levels of administration. Nevertheless, in interests of economy and efficient use of federal funds it is certainly apparent that people in the higher levels of the administration should be convinced by now of the practicality of requesting insect control appropriations from Congress and the Bureau of Budget on

a continuing basis as dictated by the necessary time factors involved in a large bark beetle control suppression project.

One-hundred fifty-six miles of road were opened in March and May of 1969 at a cost of $20,000 from insect and disease control funds. One hundred forty-seven miles of road were maintained for the benefit of suppression activities at a cost of $17,658 of insect and disease control funds. There were 14 miles of road either constructed or resurfaced and drained which could have benefited suppression work had it been correlated with the treating activities. This work cost $24,000 of insect disease control funds and $62,000 of FR&T funds.

Some of the main recommendations made in the final report for the 1968-69 project were:

1. That this project be continued as programmed in 1968 and as on-the-ground conditions indicated. Treating results substantiate the effectiveness of chemical spraying carried out in conjunction with logging. In the past the infestation has been successfully reduced to an endemic level over a large area. The number of infested trees were reduced on the project area in 1966-67 by 50% and another 29% in 1967-68. These results could not have occurred without the continued follow-up of chemical treatment of the project areas. The reason for the small rate of reduction in 1968 is simply because there were significantly fewer infested trees. In fact, eight additional units within the project area have been reduced apparently to endemic levels. To abandon the project after accomplishing so much would be a tragic waste of resource, effort, and money. A strong possibility exists that the epidemic would build back rapidly before harvest could be possible resulting in the loss of considerable volume of merchantable timber.

Several contractors had to pay liquidated damages in order to complete their contracts satisfactorily. In fact, it was necessary to partially default one contractor to make it possible to complete treating on two units. The reprocurement cost to him will amount to several thousand dollars. It would be ironical indeed after such strong efforts to insure such complete and high quality suppression work to abandon the project even for one year. We are finally at the point where, with appropriate follow-up chemical treating, we could possibly accomplish objectives that we have been working towards for the past 10 years.

2. Once again, it is recommended that full project financing be made available prior to September 1 based on the approved 5200-10 project proposal. We further suggested these funds be used to pre-spot the infested trees or project area by Forest Service crews during the months of October and November. Treating contracts ~~were to~~ can then be prepared and advertised during December for awarding in January, 1970. This would allow contractors and the Forest Service ample time to organize and to obtain men and equipment prior to the time when weather and snow conditions make it possible to begin treating work in the spring. Good fall weather has been wasted in the past due to the late financing of these projects. No actual project work was possible during the fall of 1968. The result was that the treating of a small area of infested trees was not completed. If the insect flight had occurred as expected, approximately 30% of the project could not have been completed.

3. We once again recommended that the treating appropriations extend past the end of the fiscal year. Cases in point were a surplus of funds in June on the past three projects because of adverse spring weather. Had it been possible to pay July, 1969 project costs from funds allotted in

fiscal year 1969, there would have been no expenditure of fiscal year 1970 funds on this project.

4. We once again recommended that the project supervisor participate in staff and other meetings where other activities were discussed and decisions made that directly affect the insect control project. The information and decisions resulting from these meetings sometimes fail to be communicated to the project organization. Resulting lack of coordination produced difficult situations that very nearly caused serious contractual difficulties.

Another strong weakness that has continually plagued project administration is the changing philosophy regarding treating contracts and the administration of these treating contracts. Although they are service contracts, they are unique in themselves. There are time elements involved, as has been pointed out, that cannot fit themselves into certain aspects of general service contracts. Weather and access are vital factors. The fact that the insects fly at a date that cannot be definitely established makes it extremely difficult to avoid time extensions if spring weather is adverse.

It can be seen from review of the projects since 1964, that at no time have the insects emerged and flown prior to July 15. Entomologists continue to insist that we require the ending date of our contracts on July 10. Spring weather conditions in this area, and the fact that we are unable to accomplish a great deal in the fall, made it impossible to complete the projects by July 10. We do not feel that July 10 is a realistic date. We have suggested several times that the ending date on these contracts be July 15. We have never experienced major insect emergence prior to that date. One might gain the impression that five days is an insignificant

amount of time and need not be considered. However, treating by the first of July has often reached a point where we were treating in excess of 10 to 15,000 trees per day. Sometimes this has gone as high as 30,000 trees per day. Five days time during this critical period would allow contractors a significant period in which to complete their contracts. We would not recommend any later date for contract termination than July 15. The attitude of contracting people that are not closely associated to the on-the-ground problems of treating contracts has been somewhat adverse and bordering on ridiculous at times. A case in point is presently it has been suggested that liquidated damage clauses be eliminated from the contract. Without liquidated damages COR's or contracting officers would be powerless to force contractors to maintain their production so that they could complete the treating work prior to the insect flight. The entire success of chemical suppression projects depends on treating being completed prior to such flights. If any significant portion of a contract unit fails to be treated and the insects emerge, results of other treating can be completely cancelled out. It is absolutely necessary that strong contract clauses be included and strong contract administration be continued. The consequences of any contractor substantially failing to meet his contract obligation create consequesnces that are intolerable as far as the success or failure of chemical suppression work is concerned. It is absolutely essential that higher levels of contract authority meet with the project supervisory personnel so that each fully understand the other's position and requirement.

It is often difficult to provide solutions to contract failures or apparent contract failures towards the latter part of a project period. We have experienced times when we have needed the contracting officer from Ogden to help resolve a conflict and disputes and his superiors have refused to

allow him to travel to the Forest. This is one of the major reasons that we have also recommended that the contracting officer's contractural authority at the Forest level be increased. Serious controversies have resulted because the contracting officer was not available to sit down with the contractor and the COR and resolve the disputes. We fully realize the tremendous responsibility of the contracting officer in Ogden. However, on projects of this size having as many contracts that are involved with the complexities that these contracts generally generate, it is essential that the contracting officer on insect control contracts be exclusively concerned with only those contracts and be fully available to the COR at any time during the contract period. Some of our major problems have been generated by lack of understanding of the problems involved in bark beetle control contracts by contracting people at higher levels of administration. It is essential that all work closely together in the preparation of the contracts with full legal advice at the time these contracts are prepared. There has been very little direction given to the project COR and his principal inspectors in contract administration. The result has been that most of our contractural experience has been learned the hard way by correcting our mistakes as we have progressed, after the fact so to speak.

The major accomplishments that have been made in 10 years of suppression efforts on the Forest are:

1. All of the area that was infested on the Spencer District, the area that was infested on the Island Park District, and that portion of the Ashton District west of Highway 191 have essentially been reduced to endemic levels. There is a small hot spot on the Big Bend Ridge west of U.S. Highway 191 on the southern edge of the Ashton District that is beginning to increase again. However, that is included in the proposed project for the spring of 1970. The degree of infestation north of

The Cave Falls highway on the Porcupine District has been held to relatively low levels of infestation. The hottest area involved that was treated during the spring of 1969 only amounted to 6 trees per acre. It can be held to these levels or lower if treating is continued during the next few years. In fact, ten treating units on the northern and western edges of the 1968-69 project area have been reduced to such a low level that it is no longer considered necessary to treat them.

The infested areas on the National Forest south of the Cave Falls Highway, which include two-thirds of the Porcupine District, all of the Teton Basin District, all of the Rexburg District and all of the lodgepole pine stand on the Swan Valley District are so heavily infested that it would be extremely expensive to attempt control. It is our opinion that by necessity we will have to allow them to run their course.

A comparison of treating effectiveness can readily be seen by the fact that the heaviest infestation north of Cave Falls Highway is six trees per acre. Immediately south of that this jumps to 20-30 trees per acre. As one progresses into the heavier infestations it runs as high as 50-60 trees per acre.

Chemical control projects such as has been conducted on the Targhee for the past several years have been extrememly complex. Time is of an essence and in order for insect control funds to be utilized effectively and economically, the sequence of events from the planning stage to the final treating of a tree must progress systematically throughout the treating year. The organization as has evolved on the Targhee National Forest has proved to be a most efficient one. The project supervisor with headquarters and warehousing facilities in St. Anthony is located in the Supervisor's Office,

the project is divided into zones, the number of zones depending upon the size of the project. Each zone is under the direction of a zone supervisor who reports to the project supervisor. He is staffed with a clerk and such assistant zone supervisors as are needed, depending upon the size of the zone. Each assistant zone supervisor is assigned the number of treating units on which he can effectively check the work each week during the project period. Under his supervision are checker crews, each checker crew being responsible for from one to three contract treating units. A checker crew consists of a foreman and four checkers. A quality control and safety officer is assigned to the zone supervisor and is responsible for all quality control, training, and safety on that zone. He reports his findings to the zone supervisor directly sending a copy of his written report each week to the project supervisor. The entire organization is under the general direction of the timber management branch chief of the Supervisor's Staff. Each zone is also assigned a warehouseman to check out tools and equipment and to maintain them.

The project supervisor is also COR for all of the treating contracts. and the zone supervisor is his principal inspector. The checker foremen are assigned as field COR inspectors and work directly with each contractor each day. All contractor reports are delivered to the checker foreman.

The (nature) of the insect is that it emerges from the tree at maturity during the latter part of July. They fly to new trees during the latter part of July, August and until about the middle of September. No treating work can be accomplished during this period. The ideal method to conduct a large treating project, assuming that funds are allotted at the beginning of the fiscal year, is for the planning to be done during the month of August.

Policies, project plans, multiple use survey reports, safety plans and so on can all be prepared during that period. Surveys, both aerial and ground, must be started at the completion of the insect flight or about September 15. A sufficient force should be organized to complete this survey by October 1. After that date Forest Service spotting crews should then pre-spot the entire area with the same degree of checking as is necessary under contract administration. On a project such as was conducted during the spring of 1969 on the Targhee National Forest this force would consist of approximately 125 men.

The time element involved in spotting would be from the first of October until the end of November. Weather is generally good throughout that period. It is a proven fact that when weather is adverse and working conditions are poor, spotting is generally of low quality. Therefore, it is essential that the finding and marking of these insect infested trees be done under the best working conditions possible during the treating year.

After spotting has been completed and thoroughly checked, the month of December can be spent preparing contracts, finalizing requests for money and bringing the project plan for the spring work up to date. All of this, of course, is dependent upon whether control lines have been established prior to spotting work. If it is a new project, and control lines have not been established it would be necessary to have an additional crew establishing control lines simultaneous to the spotting work in the fall. Contracts can then be awarded in January allowing contractors ample time to obtain needed equipment and supplies and to arrange for treating crews. No treating work can be effectively done until about the first of May. However, the planning, paintlining, spotting, contract unit preparation, contract advertisement and awards have been made during the fall and winter

preceding the actual treating.

It is surprising how effective the treating organization can work during the spring. As soon as weather conditions and access are favorable in May, contractors can then start the actual on-the-ground spraying. Prior to this, however, checkers have to be organized, recruited, and trained prior to the day the contractor treats his first tree. This generally takes about a week. As soon as his work starts, the contractors treat line by line through each contract unit. Every tree is checked for adequacy of treating and the work progresses until about the middle of July. This will vary depending upon weather conditions during May and June; however, if all the preparatory work has been completed prior to the actual treating in the spring, treating work can be effectively carried out by the middle of July. It would be nearly impossible to expect the treating on a large insect control project to be accomplished by the end of June. One can readily see the necessity for allowing insect control funds to carry over into the month of July of the next fiscal year.

Time elements involved in organizing crews are at least two to three weeks. Detailers for project overhead are always necessary from other Forests and they must be notified well in advance of need. They must make arrangements with their people and by the time the people can report for work, at least two weeks and mostly three weeks have evolved. The same applies to the recruitment of local employees. The ordering of supplies takes from three to four weeks. This must be done prior to the beginning of any work. In fact, we have experienced delays as much as six to eight weeks in obtaining jeep cans, tree marking paint, etc. Twenty-five to thirty vehicles are necessary in a large project. At least two weeks are involved in

obtaining these vehicles. The minimum amount of time that a contract can be prepared, advertised, and awarded is three weeks. Some times this has been four to five weeks. However, our contracting procedures have improved to the point where it is not uncommon to award a contract in three weeks time from its initial preparation through advertising and award but that is an absolute minimum.

If one stopped to visualize just what is involved in finally spraying the tree, it would appear that the large projects carried out on the Targhee National Forest were an impossibility. For example, the 1968-69 project covered approximately 165,000 acres. Practically every tree on that area was examined for insect attack and if infested a tag was placed on it and the opposite side blazed so that the packers and treaters can find them. Next, the contract treaters go through lane by lane throughout that area spraying the trees, each tree requiring an average of 3½ gallons of insecticide. All of the insecticide is packed by horse from the nearest road. After each tree is sprayed, the checkers go through each lane examining every tree to make sure the spotters have found all of the insect infested trees, checking the quality of the spraying, and either rejecting or accepting the work of the contractor.

Every gallon of insecticide is hauled by truck into the woods to staging areas from a central dump. There were 30,000 jeep cans involved in the 1968-69 project, 125 men were in the Forest Service organization, approximately 300 men in contractor's crews, and about 400 head of horses were used to pack the insecticide into the woods.

The average number of trees in a stand of lodgepole such as were involved in this project is about 150 stems per acre. Each one of these trees is examined at least three times during the course of the project. Two hundred and

Thirteen thousand trees were chemically treated during the course of the project. Considering that there were 165,000 acres involved with an average of 150 trees per acre, it can be seen that 24,750,000 trees were examined for a total of approximately 75,000,000 individual examinations. All of this work was done by crews walking through the woods. It is not difficult, considering these facts, to realize the complexities involved in carrying out a large chemical control project. The most recent project was not the largest one carried out on the Targhee during the last ten year period. The 1966-67 project treated approximately 600,000 trees, That, of course, is only a fraction of the number of trees that were examined on the project area.

SUMMARY OF PROBLEMS

Based on the experiences of the Targhee National Forest throughout the period from 1958 through 1969, it is our opinion that a much more aggressive initial attack and philosophy is necessary at higher levels of management in the Forest Service. Prior to 1958 it had long been realized by the foresters in this area that conditions were very favorable to a major bark beetle attack. As early as 1927 outbreaks had occurred and had continually occurred at various times prior to the discovery of this outbreak. Beginning with the project proposal presented during the fall of 1958, it was recognized that aggressive action must be taken both in timber harvest and suppression if the infestation was to be contained and reduced to endemic levels. However, it can be readily seen by carefully reviewing this history and by examining the methods of financing insect control activities at the Washington Office level, that finances have practically never been adequate to do a complete job throughout the years the control projects have been carried out, since the initial discovery of the present epidemic situation.

Our sincere recommendations regarding any such situation such as occurred on the Targhee are that if finances are going to be expended and efforts made to control and contain epidemics of mountain pine beetle attack, the decision must be made at the beginning to go all out and support the suppression efforts entirely with no reservations.

These epidemics can be compared quite closely with a major forest fire. It accomplishes very little to hot spot the treating within a major infestation. If large areas of infestation are allowed to go unchecked the battle will be lost and the Targhee National Forest is an excellent example. The philosophy of doing with what you have instead of being supported 100 percent is merely like pouring money down a rathole. In the past several years, several million dollars have been spent on the control projects as compared with several thousand or at least less

than one million dollars which possibly could have contained the infestation in only a relatively few years. It would be far more economical and practical to finance projects either 100 percent or not at all. The problems cannot be solved by piecemeal suppression activities.

A careful examination of the maps attached to this report make it very clear that in the beginning years, suppression activities would have been small compared with what they eventually evolved into. It is also an established fact that timber harvest on large mature and overmature lodgepole timber stands is the only effective method of long-range control. Chemical control merely fights a holding action until the timber stand can be brought to a younger age class and silvicultural control established.

Sporadic financing of suppression projects is a major obstacle to the efficient use of funds. Considering time elements involved and the absolute necessity for meeting planned work schedules, it is imperative to finance each project in its entirety at the beginning of each fiscal year. The allotting of insect control funds on a fiscal year basis has created many problems and also contributes materially to the inefficient use of these funds. Costs are considerably higher than is necessary because of these two factors.

Contract specialists and legal counsel must work closely with project personnel. Their lack of understanding of what is involved in a treating project, the difficulties encountered and the complex nature of the work have resulted in disputes and litigation. The lack of strong penalties in the treating contract for failure to treat all trees on a contract area has, in the past, primarily resulted in a few areas not being completed on time.

Failure to include the porject supervisor in planning and policy meetings has often resulted in a lack of coordination with other activities on the National

Forest. It is the author's opinion that project supervisors on large suppression projects should at least be accorded full staff responsibility for all suppression activities.

A basic organization of project supervisory personnel is essential for the efficient conduct of an all out attack of a major bark beetle epidemic. There is probably no solution to the problem of providing trained personnel for the main body of the suppression organization except to train them ourselves; however, the zone supervisor level and assistant zone supervisors must be a permanent organization on control activities such as has been carried out on the Targhee for the past ten years. The sporadic financing contributes again to this problem. It is extremely difficult to finance such an organization nor can enough time for adequate training be provided unless finances are known at the beginning of the project and all activities carried out in proper sequence.

Lengthy, intensive ground surveys have been largely inaccurate and unnecessary. A reconnaissance survey is adequate to determine the extent of infestation and pre-spotting will provide considerably more accuracy than surveys have shown. ~~XXXX~~ Statistical surveys have resulted in a wide variation in accuracy and units have over-treated as much as 150 percent. Other units have undertreated to the extent that if the actual number of trees had been known, the unit would not have been treated in the first place. Contract guarantees have had to be established to protect the contractor in these situations. Therefore, a light reconnaissance survey followed up by a complete pre-spotted area with 100 percent checking of the spotting work before contracts are even advertised is recommended. In the past, sample checking has been attempted. Such checking was entirely unsatisfactory and resulted in many contract problems. Experience has shown that the only accurate way to get a good job accomplished is 100 percent checking of all work whether it is by force account crews or contractors.

Entire areas of infestation must be treated if the results are to be successful, regardless of land ownership or the cooperation available. At present there is no problem because in this respect authorization to treat alienated lands within or outside the National Forest boundary up to a certain percentage of the total project cost has been granted. However, the problem has been extreme in the past and it is mentioned here for the benefit of those who may be planning suppression projects on other areas.

When an epidemic situation is detected and a decision has been made to attempt chemical control, it is absolutely necessary that it also be realized at that time that 100 percent support of the suppression activities be given to the project from all levels of administration. The Chief's Office in Washington must realize the importance of this support and assure proper financing for the project throughout the years that it takes to solve the problem. GSA personnel should be made to realize the emergency nature involved so that supplies and equipment can be quickly procured prior to field work. Contracting people in the Regional Office must understand what is involved in treating contracts and be able to adjust their philosophy and thinking to the necessary time limitations required in insect treating contracts. They must also provide strong contracts and strong contract administrative support for contracting officers. Here again, time is of an essence; the insects will not wait to fly for administrative procedures to dawdle along. Regional Foresters must support the project by insisting that other Forests contribute their share of experienced personnel. An epidemic situation such as the Targhee has experienced for the past ten years is a Service-wide problem and not the problem of only one National Forest involved. It was fully realized that other Forests had their own work to accomplish, their own problems, etc; however, it must be realized by other Forest Supervisors that an insect problem such as exists on the Targhee cannot be handled by that Forest alone.

Adequate supervisory personnel with contract administrative experience is essential to the successful completion of each project involved during the course of the suppression activities.

GENERAL

The remarks made in this chronology are not to imply that the Targhee National Forest has not had considerable help and support at all levels of the Forest Service. Each project, as it was planned, has been successfully completed. Other units of the Targhee National Forest have contributed considerably to these efforts. The Regional Office personnel have given excellent support in obtaining finances, supplies, manpower, etc. as far as they could. Most other Forests in the Region have continually sacrificed their own work to provide us with as many high caliber detailers as they felt was possible. Insect and disease control people in the Chief's Office have obviously worked under unsurmountable problems in attempting to allocate money throughout the United States. The Targhee bark beetle control efforts have evolved into the largest project of its kind that the Forest Service has ever undertaken and the high degree of success was primarily because of significant help provided from all levels.

The points brought out here of mistakes, inadequate philosophy of attack, weaknesses, and prblems encountered are documented for the sole purpose of providing information so that these same problems, mistakes, etc., can be corrected in the future. The system of financing in the United States Government and in personnel practices are probably the biggest contributor to these problems. It is not impossible to correct the weaknesses in this system. Many people throughout the Forest Service realize that these weaknesses exist. It is hoped that this account of insect-control activities on the Targhee National Forest during the past ten years will help provide them the necessary evidence to help towards correcting them.

Research efforts by the Forest Service to find a more efficient and economical

method of bark beetle suppression appear to be minimal. In view of the vast sums expended and the complexities involved with chemical control; and the obvious time problems necessary in silvicultural control ; it would seem appropriate that aggressive effort must be made by the Forest Service Research Organization to find a better way of controlling these insects.

The major portion of insect and disease control appropriations are reportedly allotted to research. Yet after ten years since the present infestation on the Targhee N.F. was discovered, suppression methods are still as primitive as they were in the 1930's. In fact, comments have been made by Forest Service research personnel to the effect that it is useless to attempt control of the beetle through artificial means. It would appear that there is a direct conflict of philosophies between land managers and research within the Forest Service organizatio and that such a negative approach contributes nothing to the solution of the problem.

Based on the experience with the mountain pine beetle on the Targhee National Forest, it is not difficult to conclude that without artificial suppression of the insects, management of older stands of lodgepole pine for saw timber is a losing proposition.

In the absence of a better suppression method the only atlernative is to chemically spray the trees, considering the time and economics involved and that most difficult decision must be made promptly and irrevocably when the epidemic is first discovered. Does this end result justify the means?

TREATING STATISTICS

Treating Years	Infested Trees Treated	Infested Trees Scheduled for Treatment	Acres	Infested Trees Logged
1958-59	3,197	7,000	*	*
1959-60	5,963	12,600	*	*
1960-61	2,983	32,700	*	*
1961-62	9,415	61,040	*	*
1962-63	43,787	177,700	*	*
1963-64	59,988	299,800	40,339	*
1964-65	28,298	650,200	18,150	23,215
1965-66	280,793	1,276,300	211,812	88,050
1966-67	554-479	1,433,700	184,068	43,245
1967-68	403,839	2,335,000	227,873	36,102
1968-69	213,247	2,903,415	169,598	42,905
70	218,240	3,432,477	139,937	35,220
71		1,523,892		
Totals	1,605,989	14,142,424		233,517

* No record of information could be located.

Treating Year	Volume Cut on Entire Forest	Volume Cut on Infested Areas	Volume Lost due to Insect Attack
1958-59	15,598 MBM	5,876 MBM	360 ~~300~~ MBM
1959-60	14,557 "	6,453 "	1,134 ~~540~~ "
1960-61	12,361 "	3,919 "	2,943 ~~700~~ "
1961-62	7,644 "	4,230 "	5,494 ~~900~~ "
1962-63	12,571 "	12,571 "	15,993 ~~3,000~~ "
1963-64	14,857 "	14,857 "	26,952 ~~10,000~~ "
1964-65	17,756 "	17,756 "	58,518 ~~101,000~~ "
1965-66	21,872 "	21,872 "	114,867 ~~73,000~~ "
1966-67	26,217 "	26,217 "	128,997 ~~129,000~~ "
1967-68	31,297 "	31,297 "	210,150 ~~200,000~~ "
1968-69	54,394 "	44,900 "	261,307 ~~240,000~~ "
69-70			308,923
70-71			137,150
Totals	229,234 MBM	189,948 MBM	1,272,818 ~~760,000~~ MBM

LOGGING STATISTICS

Treating Years	Volume Sold on Forest	Volume Offered and Not Sold
1958-59	5,421 MBM	-
1959-60	36,852 "	-
1960-61	322,461 "	-
1961-62	8,756 "	-
1962-63	18,825 "	6,230 MBM
1963-64	9,883 "	14,000 "
1964-65	26,612	5,250 "
1965-66	27,330	1,500 "
1966-67	32,035 "	-
1967-68	62,900 "	260 "
1968-69	37,208 "	156,500 "
Total	488,283 MBM	183,740 MBM

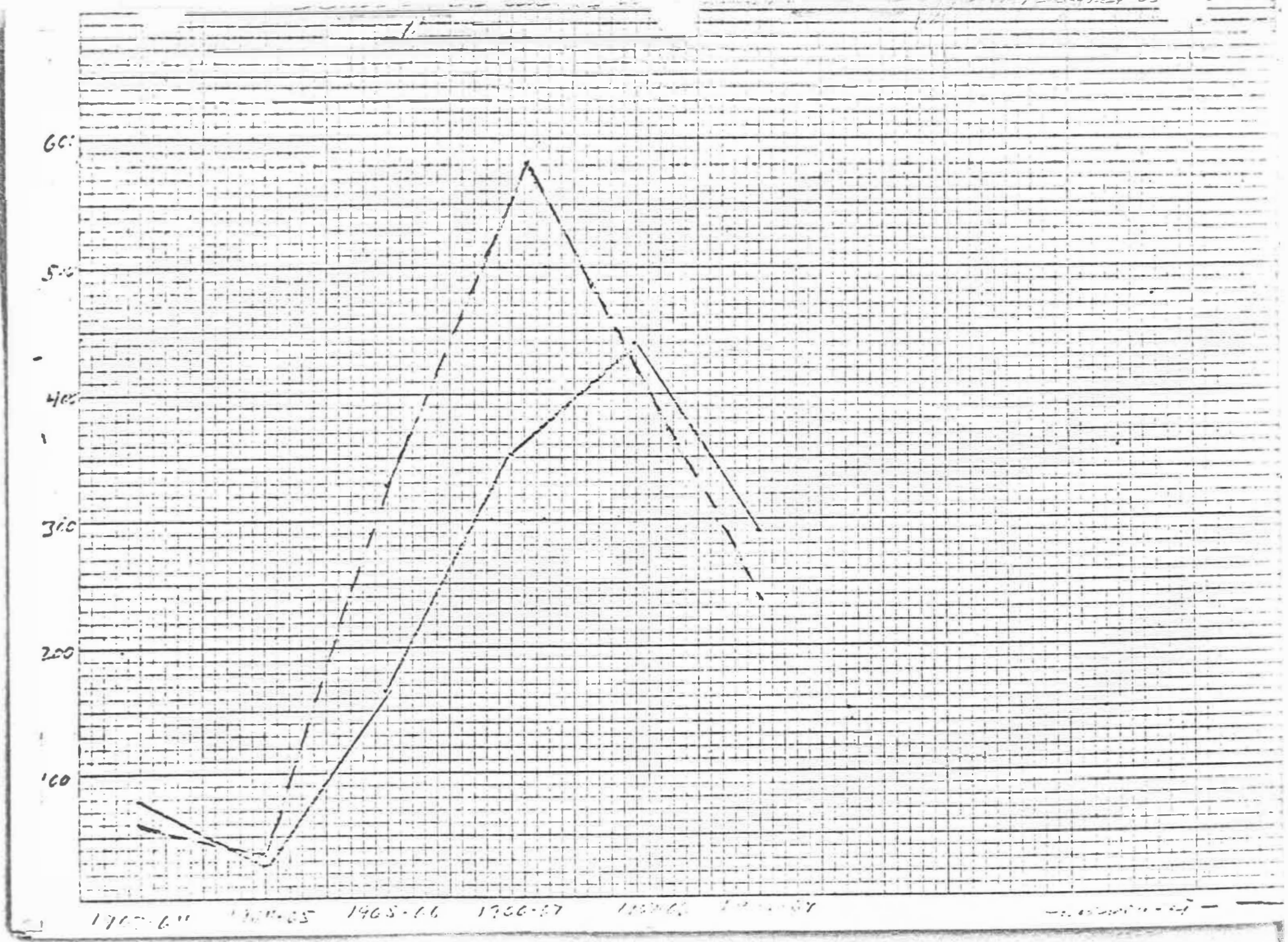
FINANCIAL STATISTICS

Treating Years	Funds Requested	Funds Received	Treating Cost/Tree
1958-59	*	*	*
1959-60	*	*	*
1960-61	*	9,858	3.30
1961-62	93,300	46,285	4.92
1962-63	*	389,305	8.89
1963-64	512,000	329,372	5.49
1964-65	1,159,220	204,318	3.97
1965-66	1,942,400	1,445,510	3.92
1966-67	2,682,880	2,692,570	4.50
1967-68	3,001,375	1,946,731	4.42
1968-69	2,414,760	1,311,156	4.40
Total		8,375,105	Average 4.55

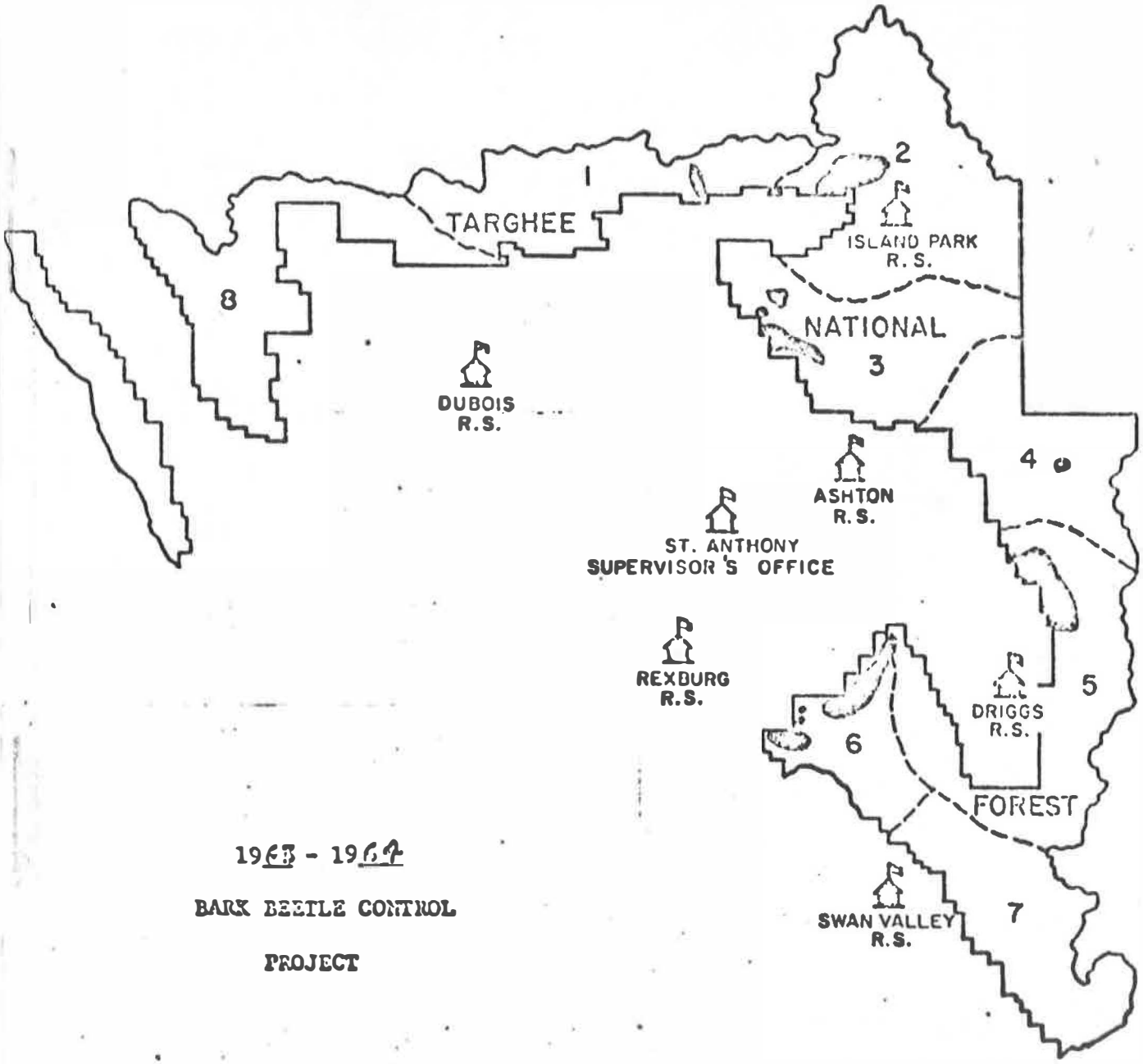
$8,375,105 spent
1,839,406 trees treated

= $4.55/tree average

*No record of information could be located.


600
500
400
300
200
100
1965-66
1966-67

TARGHEE NATIONAL FOREST

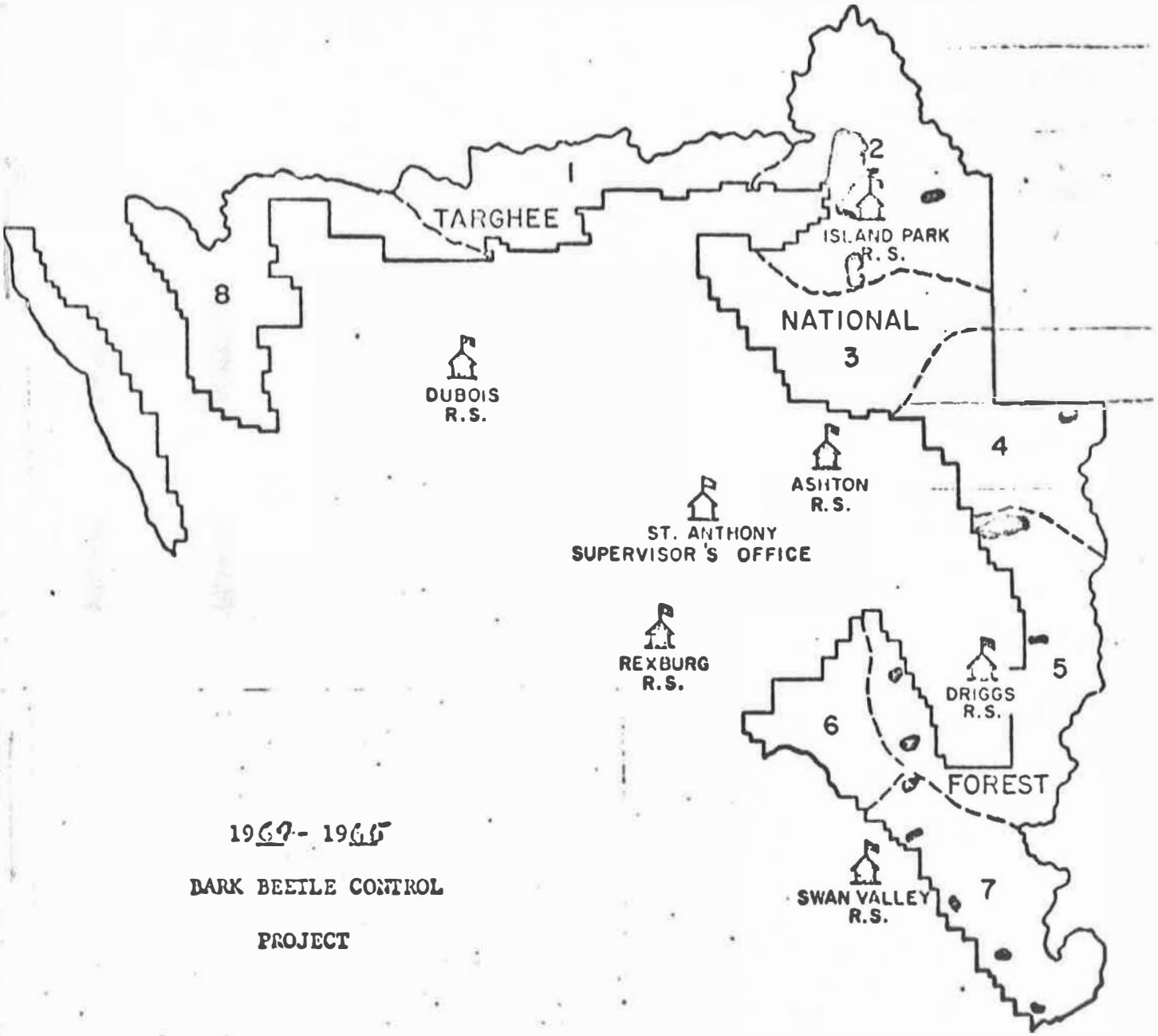


1963 - 1964

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST

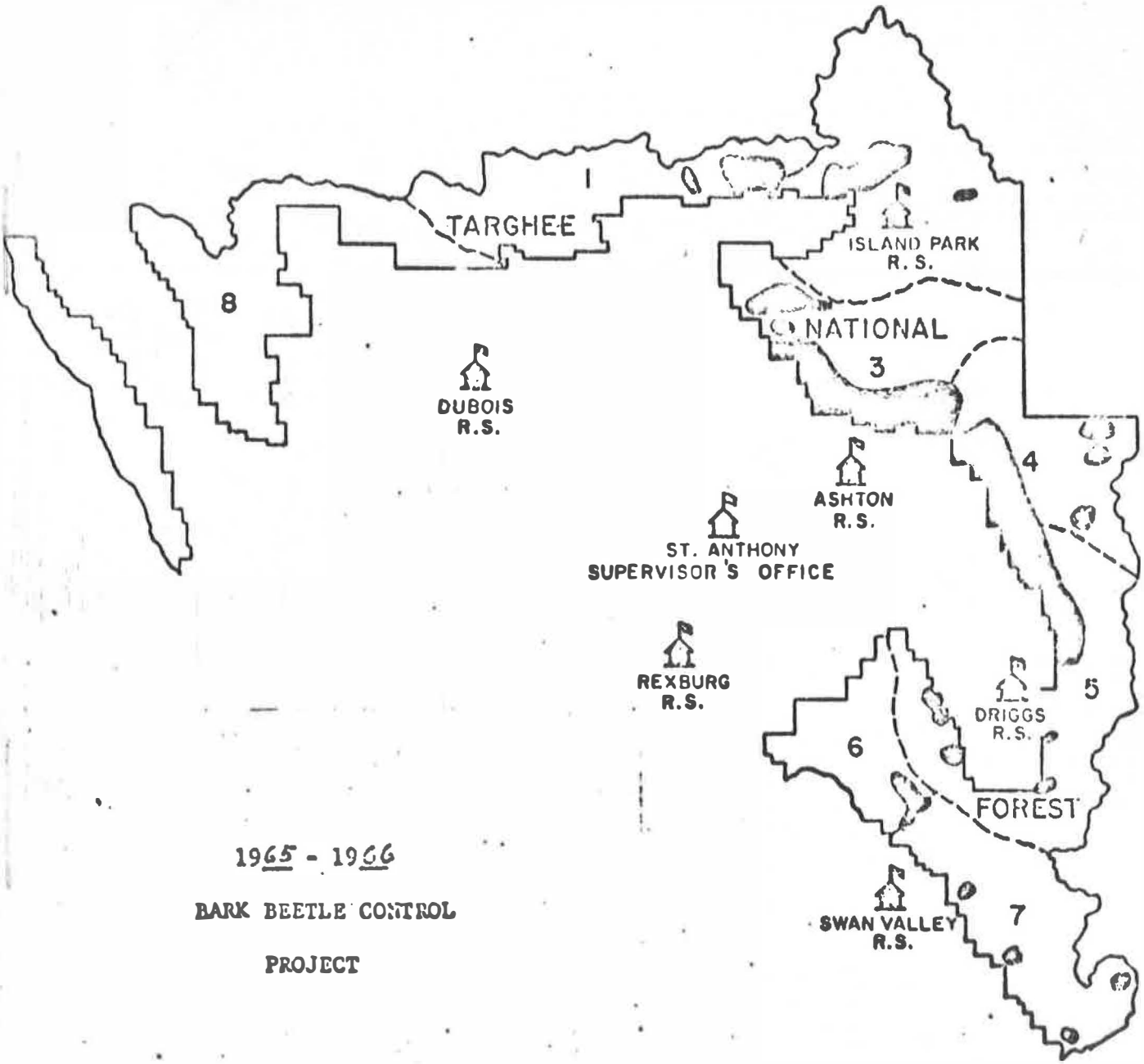


1969 - 1969

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST

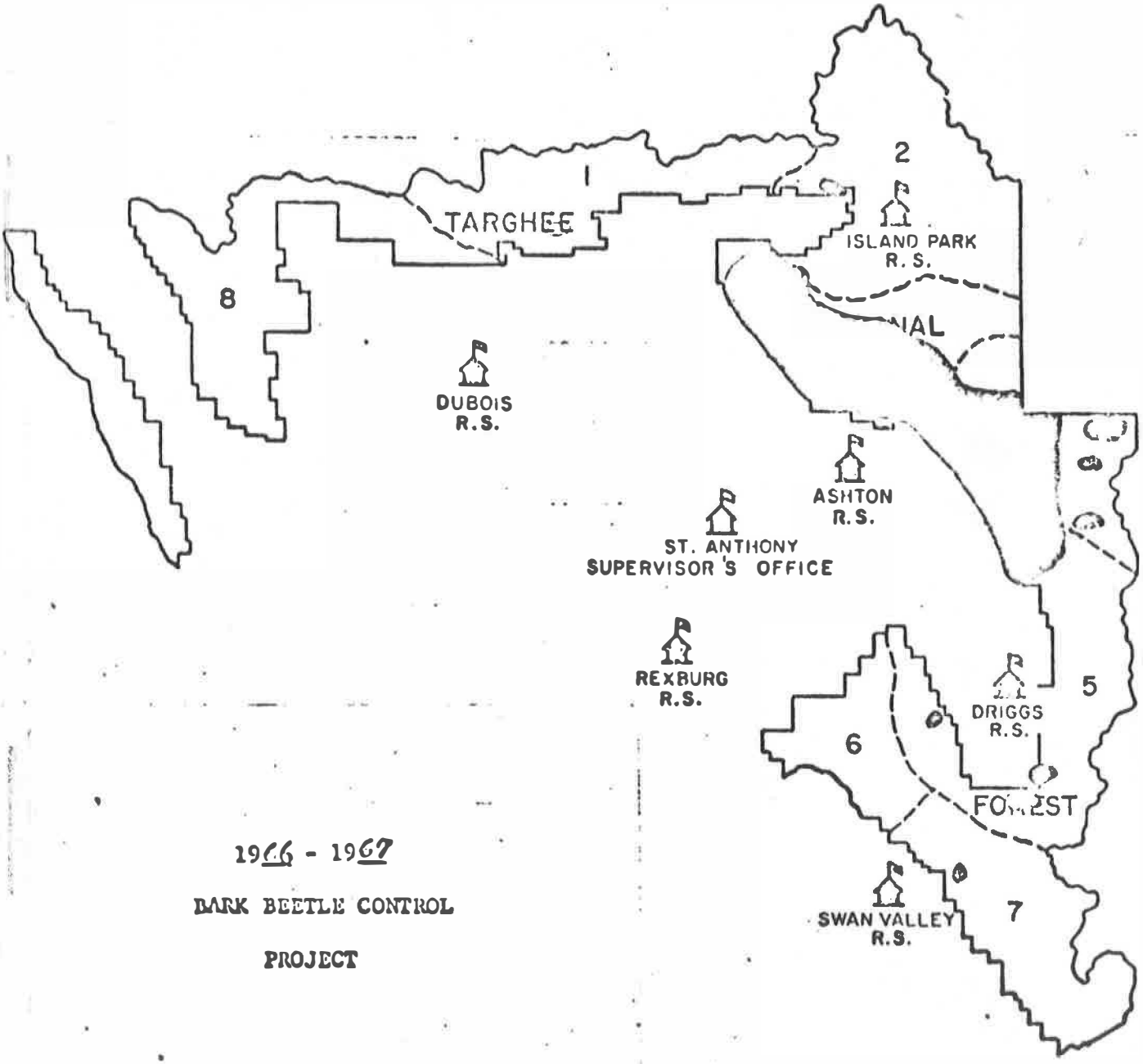


1965 - 1966

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST

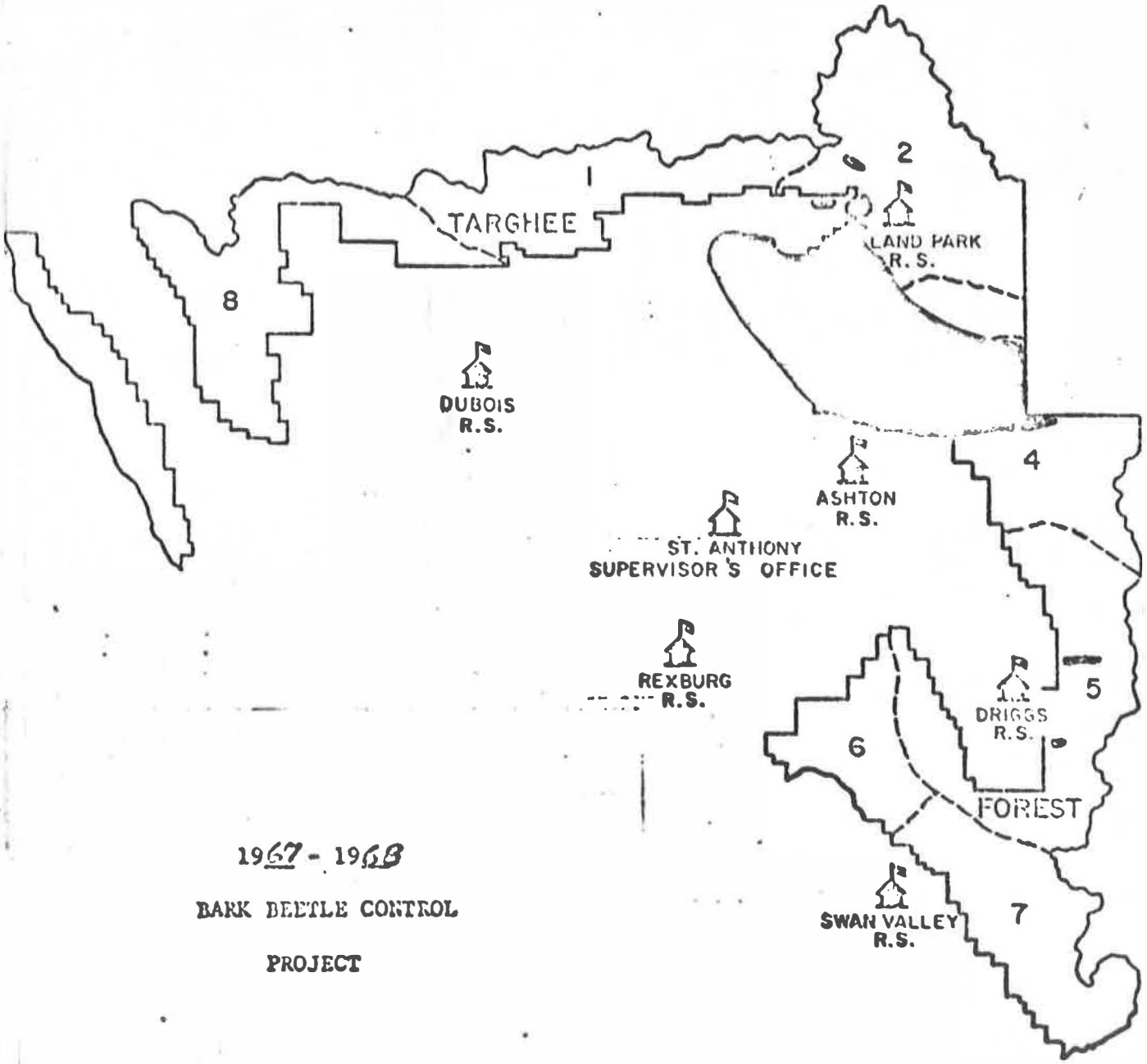


1966 - 1967

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST

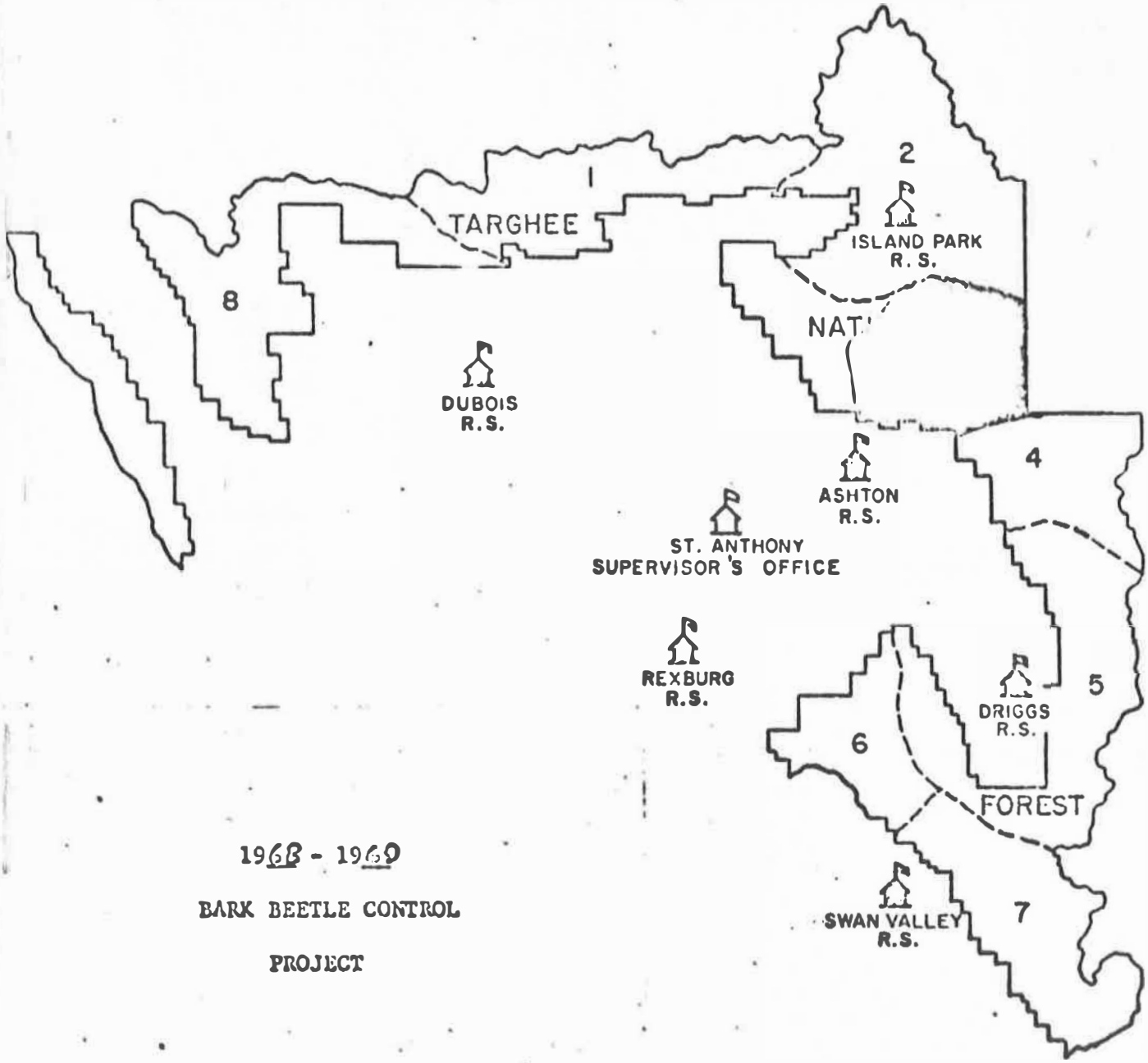


1967 - 1968

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST

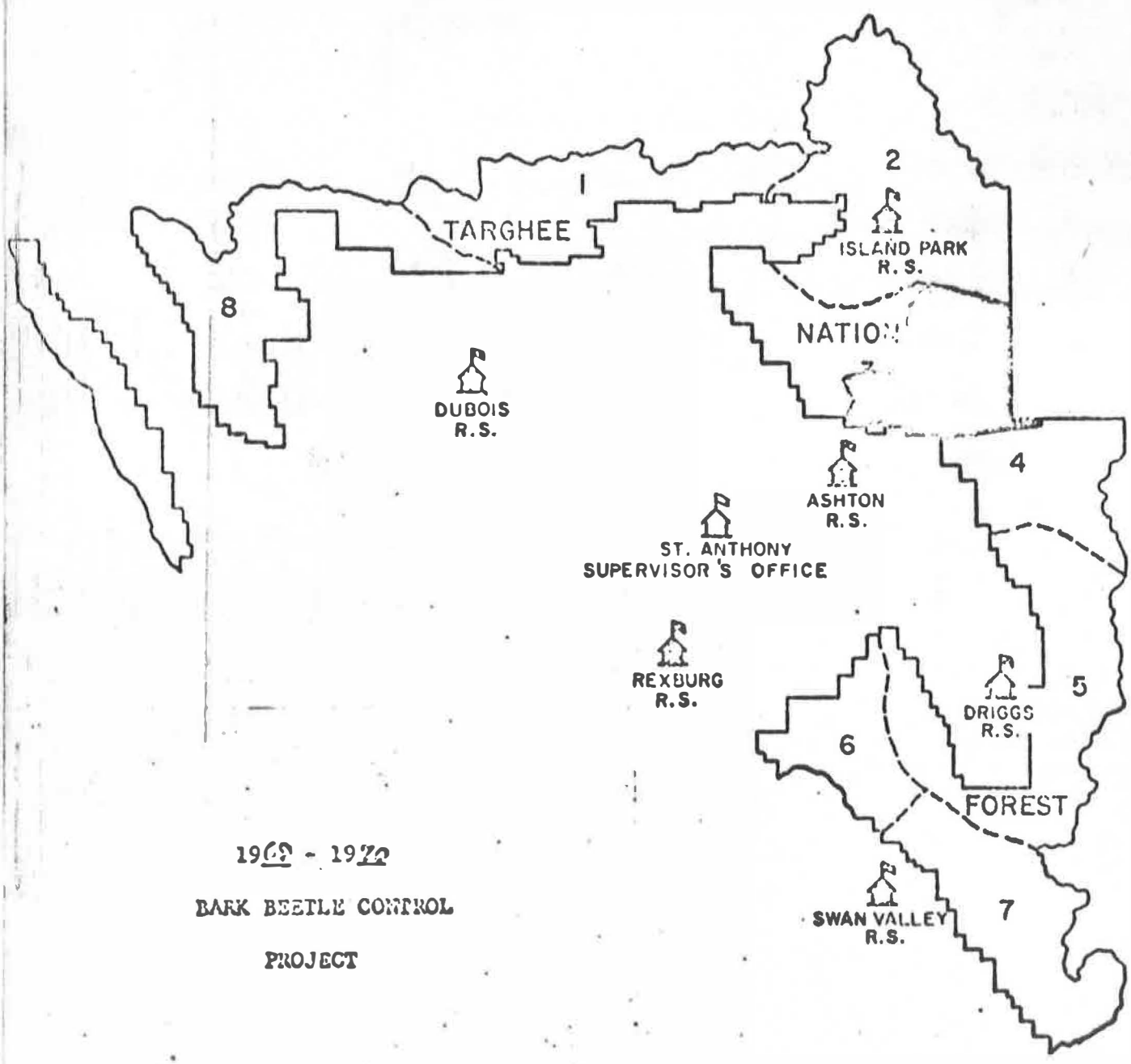


1968 - 1969

BARK BEETLE CONTROL

PROJECT

TARGHEE NATIONAL FOREST



19[illegible] - 19[illegible]

BARK BEETLE CONTROL

PROJECT